THE SCHOOL REVIEW
A JOURNAL OF SECONDARY EDUCATION

VOLUME XXI MAY 1913 NUMBER 5

THE PRACTICAL RESULTS OF RECENT STUDIES IN EDUCATIONAL STATISTICS[1]

WALTER F. DEARBORN
Harvard University

Experimentation in education, however desirable, must, in the nature of the case and in the interests of its subjects, be much more limited in amount and scope than in the natural sciences and even in some other of the social sciences. It is for this reason the more necessary that present practices and methods now in use in education be evaluated before changes are made in them or they are replaced by others. Present practices, until they have been tested and their effects known, as far as that is possible, should be regarded as nothing but great educational experiments. Only in this way can we have any real guaranty that the new in education is any better than the old.

Since the effects of educational practices can seldom be estimated by the results in any one case but only from the results in large groups of cases, they involve statistical procedures for their proper understanding and evaluation. Statistics is a science of making numbers intelligible. Unfortunately, it frequently produces the opposite effect. Many of us pass over columns of figures and statistical computations as gladly and with as few compunctions as we do the descriptions of natural scenery which interrupt the plot

[1] Read at the meeting of the Harvard Teachers Association, Cambridge, Massachusetts, March 15, 1913.

of an exciting novel. But whatever our prejudices, it must be recognized that the necessary statistical studies of school work have been all too few and that in our office and classroom records there is not a little material, the proper study of which would furnish a basis for discriminating judgments of the value of past and present practices in education.

I wish to call attention to one group of such studies on the relations of schools and colleges.

College authorities usually estimate, in a general way, the efficiency of high schools and academies on the basis of the preparation and attainments of the pupils who come to them from these schools and, in their turn, the high-school principals have been rating the elementary schools in terms of the success or failure of the elementary pupils in the high-school classes. With the decreasing importance of the entrance examinations and the extension of methods of certification and accreditation of schools, these judgments passed by one institution upon another have assumed considerable importance. The principle of these comparisons, namely the rating of a school on the basis of the relative standing taken by its pupils in a second institution, is, it is believed by the writer, a sound one and may lead to reliable conclusions. The methods and ways in which this principle is ordinarily made use of are, however, frequently crude and incomplete and lead to individual opinions rather than to reliable evidence.

These methods may not only be made much more accurate and trustworthy but are susceptible of much further extension. By their use it is not only possible for higher schools to accredit the lower schools justly, but it is also possible for the lower schools to pass reliable judgments on the quality of work in the higher institutions. As an illustration of this last statement, a condition may be cited that has been met with in these studies. The graduates of a certain academy have, for a period of many years, gone in large numbers to two colleges. At one of these colleges, even the lowest ranking pupils from the academy are admitted and take satisfactory standing. At the other college, only the best of the academy's graduates find admission, and frequently they take no more than average standing in their college work. This condition is sub-

stantiated by other high schools and academies which send pupils to these two colleges and should be sufficient to raise a strong presumption that the standard of work in one of these colleges is very much inferior to that of the other college.

Comparisons such as this, on the basis of the character and attainments of the same or comparable groups of students in two or more different institutions, may therefore not only furnish facts on the basis of which the college may evaluate the work of the various secondary schools but may often furnish the basis of reliable judgments by the secondary schools in regard to the character of the higher institutions. The latter may be judged, first, by the sort of pupils they secure and, secondly, by the way in which they handle this product of the secondary schools. A group of high schools may thus, through the comparative records which their students make in the colleges and higher technical and professional schools, pass judgment upon these higher institutions of learning.

A similar outcome will result from the comparison of high schools with elementary schools. High-school teachers criticize freely the product of the elementary schools and they do so practically always in terms of high-school standards. These contributing elementary schools have just as good reason to estimate and control the character of work in the high schools in relation to their own standards, and they have in the comparative records of their pupils in the high schools excellent means of doing so.

A simple study of this latter sort, which not a few principals in the Middle West are now carrying out to advantage in their own schools, may be illustrated by the following example. A group of about 100 students in a small city high school were divided into three divisions on the basis of their average rank in the elementary school. The question was then asked, "In how far do those students who stood in the various thirds—upper, middle, and lower—of their class in the elementary school maintain the same relative rank in the high school, that is, remain in similar divisions of the high-school class?"

The accompanying table answers the question. Of the pupils who were in the first third of the elementary school class 81 per cent maintain their rank in the first third of the high school, 50 per cent who were in the middle third remain there in high school, and 64

per cent of those who ranked lowest in the elementary school are found to be in the lowest third of the high-school class. On the average, then, 65 per cent remain in the same divisions of the high school in which they were in the elementary school. Small variations which are of no great significance may be neglected by the comparison made in the second part of the table (Tertile-Median Method), which shows that 90 per cent of the pupils who were in the first third of the elementary school class maintained a position above the middle (median) of the high-school class, and 84 per cent of those in the lowest third remain below the median of the high-school

TABLE I

PERCENTAGES OF RETENTION

	1 Tertile	2 Tertile	3 Tertile
	Percentage	Percentage	Percentage
Tertile Method:			
Average	81	50	64
Mathematics	75	51	78
English	66	40	53

	High	Low
	Percentage	Percentage
Tertile-Median Method: (Per cent in extreme tertiles not varying beyond the median.)		
Average	90	84
Mathematics	87	84
English	81	78

class. By averaging these two percentages, we may express the "percentage of retention" of this elementary school in a single figure, as 87 per cent. In other words, only about 13 per cent of these students differed in rank in high school appreciably from the rank which they had attained in the elementary school.

The comparison has also been made for separate subjects, as shown in the table for mathematics and English. The results point to a high degree of correlation between the work and standards of this particular elementary school and high school.

The problem is more complex when the comparison is made between several elementary schools and high schools in a large city. Such a study has been carried out successfully by Mr. Carter in the

schools of Milwaukee. His study was made on the basis of one year's class of 1,497 pupils from 39 elementary schools. Of these, 670 or about 45 per cent entered high school.

There are several features of the study which demand special attention.

One elementary school may send largely its poorest or average pupils to the high school; another school may send only its better pupils. It is evidently not fair to judge of the merits of the two schools by such an unequal sampling of their pupils.

In general, those who entered high school in this city were but little superior in scholarship to those who dropped out of school on the completion of the eighth grade. Less than 57 per cent of those who remained in school ranked above the middle (median) of their class in the elementary school. The same fact may be expressed by stating the percentages of those who went on to high school from the various thirds of the elementary classes. This is done in the first line of the accompanying table on the basis of the averages from twenty-five schools, and shows that 27 per cent went to high school from the lowest thirds of the elementary school classes, 35 per cent from the middle thirds, and 38 per cent from the high thirds.

TABLE II

PERCENTAGE OF PUPILS ENTERING HIGH SCHOOL FROM THE TERTILES OF ELEMENTARY SCHOOL CLASSES

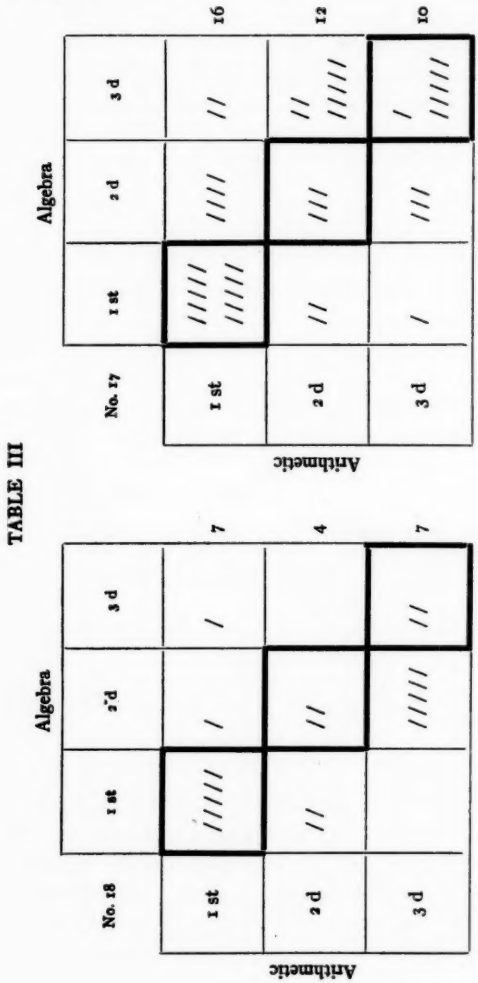
(Subject Languages)

	Low Third	Middle Third	High Third
	Percentage	Percentage	Percentage
1. Average 25 Schools.....	27	35	38
2. School No. 14.....	49	35	35
3. School No. 4.....	21	57	86

Two schools whose representation differed noticeably from these averages are cited by way of illustration in the next two lines of the table. From School No. 14 one-half of the poorest pupils (49 per cent) were sent to high school and one-third of the best (35 per cent); from School No. 4 a fifth (21 per cent) of its poorest pupils and over four-fifths (86 per cent) of its best pupils went on to high

school. If one is to judge of the relative merits of these two schools in terms of the performance of their pupils in high school, these differences in representation must very evidently be taken account of. This has been done by Mr. Carter by means of the following scheme of comparison:

TABLE III



In the horizontal lines, the pupils are arranged by the thirds of the elementary class from which they came; in the three vertical columns, the same pupils are classified according to their standing in the high-school class. The subjects of comparison are arithmetic and algebra. The pupils in the three diagonal squares inclosed by heavy lines have not changed their relative position in going from the elementary school to high school. The pupils in the three squares below the heavy lined squares have advanced; those above these squares have regressed in relative standing.

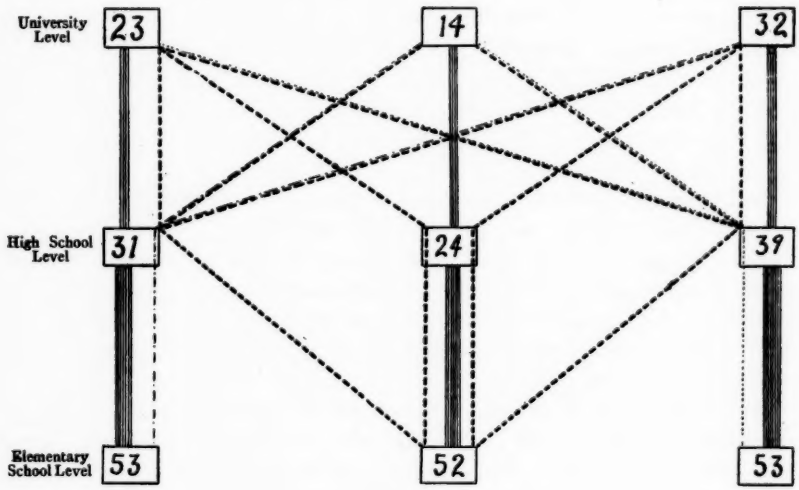
School 17 sent a group to high school which was above the average of the original class, there being more students from the upper third than the lower. In the high school, 13 of these pupils fell in rank while 6 improved in rank. In other words, a better than average group on the basis of elementary school standards took less than average standing in the high school—a poor showing for the school.

In School 18, the class originally numbered 28: 18 of these went to high school including 7 from the lowest third of the class. Of these 18, 7 improved their rank while but 2 were lowered in rank. In other words, a very average group from the elementary school, including a large representation of the poorest pupils in school, made a better than average standing in the high school—a very good showing for the school.

The correlations of standing between the elementary and high schools in this city were, on the average, low, as has been shown in Table II. Miles found a much higher percentage of relation in a study of elementary and high schools in the state of Iowa. His results are expressed by the Pearson coefficient of correlation, as +71 per cent. The similar coefficient of correlation between 8 large high schools and the University of Wisconsin was found to be +80 per cent. F. O. Smith found a similar degree of relation between one high school and the State University of Iowa. Expressed in terms of the change of rank about the median, the results at Iowa and Wisconsin are in close agreement, about 70 per cent of pupils remaining in each case in the respective halves of the class in which they stood in the high-school grouping. President Lowell has carried the comparison a step farther and has shown that

the students who take high rank in college, irrespective of the subject-matter of their courses, are the ones who take the superior rank in the professional schools of law and medicine.

Dr. Clement, in a study of a large number of elementary schools, high schools, and colleges in the state of Kansas, was the first to follow the course of a group of the same students through three institutions from the elementary school to the college. Some of his results may be roughly summarized by making use of the following chart, an adaptation of one suggested by Mr. Carter.[1]



A pupil starting in any third of the group in the elementary school has according to this scheme nine possible paths by which he may reach college; he may take rank in either the high, middle, or low third of the high-school class, and finish his course in any one of the thirds of the college class. With these nine possibilities of fluctuation, it is interesting to find that in the high third of the class over 60 per cent take the straightest course—that is, they go from first rank in elementary school to first rank in high school, to first rank in university. In the group under study, there are 158 pupils.

[1] In an unpublished study.

The number who follow the straight courses are indicated in the diagram by continuous lines; those who follow other courses are indicated for the middle group by heavy dotted lines. The percentages are given below.

TABLE IV

PERCENTAGES OF RETENTION (ACCORDING TO ABOVE CHART)

Elem. school–Colleges.....	43.4	26.9	60.4
High school–Colleges.....	74.2	54.4	82.1
Elem. school–High school.....	58.5	46.2	73.6

There is really a higher percentage of retention if the beginning and end of the course are alone considered. Six pupils, for instance, who started in the first third of the elementary class, fell to lower thirds in the high school but regained their position in the college, giving a final percentage of 74 per cent of those starting in the upper third of the elementary-school class, and finishing in the upper third of the college class.

Clements' results may best be expressed in terms of the percentage of pupils in the high and low thirds of the class who do not change their relative position sufficiently to cross the middle line of the class (Tertile-Median Comparison). These results, as shown in the following Table V, indicate that there was between the institutions a very high degree of correlation.

TABLE V

PERCENTAGES OF RETENTION (TERTILE-MEDIAN METHOD)

Grammar School No. 5–High School No. 5–College No. 2 = 70 per cent (90 cases)
Grammar School No. 6–High School No. 6–College No. 3 = 75 per cent (90 cases)
Grammar School No. 1–High School No. 1–College No. 1 = 85 per cent (158 cases)

In the light of these results and those summarized above, we may conclude that a percentage of retention of 75 per cent expressed in terms of the Tertile-Median Method or of the Pearson Coefficient of Correlation on the basis of the relative rank maintained by pupils in related institutions is an attainable standard. Marked deviation from this standard either in the case of separate subjects of study or on the basis of the general averages, and either within the same

school or between different schools, might well lead to investigations of the reasons and causes.

The consistency of performance from the early to the late years of school life in the case of such large groups of students, as is shown by these results, is not without significance to the student and administrator interested in the possibilities of educational prognosis.

The results bear also on the more general question of nature versus nurture, of the mental differences due to inborn capacity and those due to training. Students appear from these studies to maintain in surprisingly large numbers from the elementary school to the college the relative rank with which they began. The diversity of training in school and college is perhaps after all not great—the comparison would gain interest, if groups of students could be compared whose intermediate training between the early years of the elementary school and the college or the professional school differed much more than is the case of those students who pursue the regular courses and methods of study—but taking the results as they stand, they appear to indicate that the changes which school training produces are not sufficient to overbalance the differences in mental ability which are there to begin with.

Aside from such bearings as these studies may have upon general educational questions, they seem to discover in a very practical way maladjustments between schools and departments of study, and instances of inharmonious working, and have proved stimulating in their effect on the organization and administration of schools. This is their chief value.

THE PRACTICAL RESULTS OF RECENT STUDIES IN EDUCATIONAL PSYCHOLOGY[1]

STEPHEN S. COLVIN
Brown University

When we consider the results of experiments in learning that have emanated from the psychological laboratories during the last decade and the investigations in experimental education that have been conducted during this same period, we are confronted with a mass of material that offers numerous points of contact with the problems of the schoolroom and suggests methods of instruction and principles of school management that are rich in promise. Still, on the other hand, there is an element of discouragement in all of this. The material is so extensive, and so unorganized and unrelated, that as yet it offers no thoroughgoing and well-digested body of facts from which to draw final and unequivocal conclusions in regard to the problems that arise in connection with the schoolroom. There are many important hints, a few definitely established facts and principles to guide the teacher, but there is much that is contradictory and uncertain in its application. Nevertheless there is a considerable amount of this material that can be directly utilized in its practical bearings by the teacher of today. It is to some of the more certain of the inferences that relate to the aims and methods of teaching that I wish to call your attention this morning.

All teaching, whether it is that of the elementary school, the college, or the university, has a few fundamental aims that it must set before itself if it is to accomplish results. In the first place, proper instruction aims at the formation of correct habits of both mind and body; again, it aims at the presentation of certain facts and principles and the grounding of the pupil in these facts and principles so that they shall become a part of his knowledge;

[1] Read at the meeting of the Harvard Teachers' Association, Cambridge, Massachusetts, March 15, 1913.

finally, and of chief importance, it aims at the developing of judgments and of general attitudes that are important in the interpretation of life in its various relationships. As far as the formation of habits and the instilling into the mind of facts and principles are concerned, the teacher's aim is to reduce the mental processes to their lowest terms, so to speak; that is, to eliminate consideration, comparison, judgment, and reasoning, and to make the mind automatic and quick to act without deliberation or elaborate thinking, in other words, to mechanize mental processes and to do away with consciously directed activities. On the other hand, the teacher must develop in the pupil the tendency and the ability to act in the light of reflective consciousness, rather than in terms of habit. These two aims are quite distinct and should be clearly separated in all good teaching.

To realize the first of these aims in instruction we must employ certain methods of teaching that may be characterized rather loosely as drill. It is therefore to the consideration of drill and the light that is thrown upon it from the standpoint of investigations in applied psychology and pedagogy that I wish first of all to call your attention. In recent years drill has been held in slight esteem by many, and while at one time it was the chief method of teaching, it has fallen of late into such ill repute that many teachers, particularly those who have older pupils under their charge, fear to admit that they ever practice it. The extreme attitude in regard to drill is voiced by McMurry,[1] who says, "Extensive drills in the future will be the recourse of those teachers only who lack energy to teach." There are various reasons for this attitude in regard to drill. One is undoubtedly the general dislike that teachers have to take up the burdens of systematically planned and rigorously developed drill. It is not easy or agreeable to keep everlastingly at some habit, fact, or principle that is to be continually presented until it has become second nature to the pupil. The easy way is not to insist on drill, but to relax it and to give the attention to something that is inherently more interesting and has in it less of the element of drudgery.

However, while there is a natural inclination on the part of both

[1] *How to Study and How to Teach*, 1909.

pupil and teacher to avoid drill, it is not for this reason primarily that in many instances it has become almost obsolete, particularly in the higher grades of instruction in the secondary school and the college. It is a matter of common observation that drill does not always yield results at all commensurate with the large amount of time and of energy expended in this drill. Further, experimental investigations in the psychology of learning have shown what may be termed the law of decreasing returns in all drill activities. The first few repetitions of materials to be learned give much higher results relatively than those that follow, and after a time the learner reaches a point where the drill adds very little to his acquisition. It seems time practically wasted to continue drill beyond a certain point. Interest is deadened through continued practice, and attention fails. When this point is reached all attempts at further learning are futile, and the wise teacher stops and turns the activities of the pupil in another and more fruitful direction. Further, investigations in experimental pedagogy, such as that of Rice on "The Futility of the Spelling Grind," published in the *Forum* in April and June, 1897, and that of Cornman on "Spelling in the Elementary School," appearing in 1902, seemed to give color to the contention that a great deal of drill is time thrown away.

However, experimental investigations in recent years indicate clearly that drill, when conducted under proper conditions, is an extremely important factor in efficient instruction. In this connection two studies of Thorndike should be mentioned. He found that practice in multiplying three-place numbers by three-place numbers when this drill consumed a total of only a few hours raised the efficiency of mature subjects to such an extent that at the end of the period they were able to do the task in two-fifths of the time that it had first taken.[1] In a later experiment he found that seven days' practice in adding resulted in an average improvement of 29 per cent.[2] This increase in ability to perform these operations seems all the more remarkable when it is remembered that exercises in multiplication and addition belong to a class of

[1] "The Effect of Practice in the Case of a Purely Intellectual Function," *American Journal of Psychology*, XIX, 374–84.

[2] "Practice in the Case of Addition," *ibid.*, XXI, 483–86.

habits that with the adult are supposed to be well perfected at the beginning of the special practice and hence are not as likely to be capable of further improvement as are habits that are at the start less perfectly formed.

Likewise Brown reports in a series of articles in the *Journal of Educational Psychology* for 1911 and 1912 that drill in the fundamental operations of arithmetic—addition, subtraction, multiplication, and division—when practiced five minutes daily for thirty recitation periods, resulted in clear improvement both in speed and accuracy.

Starch found that drill in mental multiplication for fourteen days showed positive effects in improving arithmetic tests in adding fractions and in various other simple operations.

Wallin[1] seems clearly to have demonstrated the value of drill in spelling, when certain precautions are taken to emphasize the words that are being studied. These tests, conducted in the Cleveland schools, gave evidence of remarkable improvement when but a few new words were studied each day and when the words previously learned were properly reviewed. Wallin's experiments emphasize the importance of what has been termed "focalization" in mechanical learning. The material that is the subject of drill must get into the focus of consciousness if the results are to be of much value. In other words, mere repetition is of little avail unless the mind is held on what is being repeated. In order to secure the proper focalization the materials learned must be made as striking as possible. This often means that they be presented under many new conditions. In other words, while the elements that are the object of drill remain the same, the form in which they are presented should be as varied as possible. Mere drill without variety is a deadening occupation, and very soon a point is reached where further advance in learning is checked through the effect of monotonous repetition.

Wallin's tests not only emphasize the fact that the elements on which the learner drills must be in the focus of consciousness; they also show the value of concentration in drill. It is not wise to drill on too many elements at the same time. Just a few facts

[1] *Journal of Educational Psychology*, 1910.

should be selected each study period to be emphasized. A large number of new facts are distracting. The drill should not lead to mental confusion by the multiplicity of new details.

Recently an attempt has been made to determine the optimal length of a drill period and the interval of time that should elapse between successive drill periods. Pyle[1] concludes from tests extending over an interval of two years and conducted with mature subjects that the length of a drill period to obtain the most satisfactory results should be about thirty minutes and that the drill should be repeated daily if possible, since better results are secured than if the drill is given every other day on the one hand or twice a day on the other.

From the present status of the investigations concerning drill it seems reasonable to conclude:

a) Properly conducted drill is a valuable adjunct to efficient teaching where it is desirable to secure mechanization and ready response, as, for example, in the use of words and constructions in a foreign language; in the employment of essential processes in mathematics; in the manipulation of materials in the laboratory and the shop; in the command of fundamental facts in history and the social sciences; in the application of principles and rules in practically all of the subjects of the curriculum. The teacher who out of mere inertia or because of his enthusiasm for the higher things in learning ignores drill is neglecting a large factor in the development of his pupils. It is not true that drill is the device of the inefficient teacher. On the contrary it requires detailed preparation. Carefully conducted drill is the mark of good teaching in every grade of instruction.

b) Variety in presentation is essential in drill. The same materials should be given in as many new settings as possible. It is the old in the setting of new surroundings that most readily secures the attention. Monotony of presentation is deadly to all learning. This principle is particularly important in connection with that drill that is secured through review. There is ample opportunity in review to present the previously learned facts in novel relationships and thus secure attention that would otherwise be lacking.

[1] *Psychological Bulletin*, February 15, 1913, p. 13.

c) The number of new elements that are the subject of drill at any particular time should be small. A multiplicity of details distracts the attention and accomplishes no good result. While the older materials may be added to the new in any drill lesson, the new materials should be the elements particularly held in attention. It is better to attempt a few new words in a foreign language in each lesson and to introduce new principles of construction sparingly than to try to cover a large amount of ground at any one time. Where drill is concerned it is concentration that counts. Nothing is gained by spreading the effort of the pupil over a wide and diversified field.

d) In the case of the secondary-school pupil a drill period of more than thirty minutes is likely to prove decreasingly valuable. It is probable for many reasons that the drill lesson cannot occupy that amount of time daily. It seems better to have a drill period each day for a short interval than every other day for a longer interval.

Closely connected with the topic of drill, indeed scarcely to be separated from it, is that of habit-formation. This is a necessary part of all school instruction and one that no teacher can ignore. In the primary grades the formation of correct habits is perhaps the most necessary phase of the education of the child. Here the best teacher is the one who can inculcate the right habits from the start. While habit-formation is all-important in the first years of school life, it cannot be ignored in the grammar grades nor in the secondary school. On the whole it may be said that the habits formed in the elementary school, particularly in the primary grades, relate more to general school attitudes, while those that the secondary-school teacher should chiefly consider center in the particular courses that he is teaching. However, whatever their nature may be, we have today, thanks to many careful investigations in this field, a considerable amount of knowledge in regard to how habits are acquired. We can consider briefly some of the most significant of the facts that have been established in this field of investigation.

a) In the first place the teacher should be aware that while the aim in habit-formation is ultimately the elimination of conscious

control, the acquisition of any complex habit is greatly facilitated by the learner recognizing the factors involved in the habit-building process. Correct methods of performance may be stumbled on, but the "blundering method" is extremely wasteful and it is the function of the teacher to step in and direct the learning; to see to it that the pupil intelligently grasps what he is doing. There is not a subject in the curriculum in which the pupil may not be materially aided by being shown how to go about his work in the proper way. Hence the teacher should first definitely determine what the best methods of attack are in learning the particular subjects that he has in charge. After this has been done it should be his aim to habituate his pupils in these methods, first by explaining what they are and then showing their value.

b) Efficient habit formation is aided in the second place by the proper affective attitude of the learner in regard to his work. It is imperative that he feel well disposed toward his task, and for this reason it is essential that he achieve a reasonable success in what he is trying to do. The effective teacher will strive in all legitimate ways to give the pupil this proper feeling attitude. Hence, while he may insist on strenuous work, he should never make it so difficult that the average pupil cannot score a reasonable success. Repeated failures make learning impossible. No school subject should be made unnecessarily hard or distasteful. There is no merit in keeping pupils at grinding tasks, merely for the sake of the grind involved. However, there are teachers who apparently fear that the subject that they teach may become too easy and are constantly looking for devices to increase its difficulty. The teacher should strive to make the subject as easy as is compatible with its mastery.

c) In forming a habit the learner needs some objective standard by which he can measure his progress both in comparison with his own former achievements and with those of his fellows. The good teacher should aim as far as possible to set up such standards and make them evident to his pupils. He should consider it one of his functions in recording marks and in giving grades to make them expressive of real attainment. To mark well is a fine art.

d) It has been shown in earlier experiments and conclusively

substantiated by those of the last few years that habits learned in one connection do not of necessity transfer themselves to activities in which there are novel conditions. Whether they do transfer or not depends largely upon whether these habits have become definite ideals in the minds of those who have formed them. The learner must be shown the significance and the value of such habits. This is particularly important in teaching the technique of scientific investigation, in inculcating the value of artistic appreciation and the like. The teacher who wishes these habitual attitudes to carry over from one field to another must see to it that these attitudes are recognized by the pupils in general as valuable.

The question of the conditions under which correct habits are formed is closely related to that of the whole problem of economic learning, that has been given much attention in the investigations of the last decade. It is not my purpose to enter into a detailed consideration of these results, nor to point out their practical importance except in so far as they indicate desirable methods of instruction.

a) The most recent experiments seem to have conclusively established the earlier conclusions arrived at by Lottie Steffens that learning by wholes is more desirable than learning piecemeal. This means as far as instruction is concerned that the teacher should present whole topics for consideration rather than small and relatively disjointed parts. It is particularly important that there should be a preliminary view of the whole topic to be considered. An intensive study of any particular part should always be preceded by a survey of the entire topic. It is sometimes desirable to have this survey extend beyond the bounds of a single lesson and perhaps cover the material of a number of related lessons, centering about the same general topic. Teachers, as a rule, tend to make their presentation too fragmentary and choppy.

b) Although there are some conflicting results, recent investigations for the most part tend to confirm the original findings of Ebbinghaus and show that it is not wise to spend a large amount of time on any one topic of study at any one sitting. For the high-school pupil, as has already been suggested, intensive work for thirty minutes in any one direction is probably better than a longer

period of application. It is better to come back to the subject again at a later sitting than to attempt to master it in one period of study. For the teacher this fact means that it is wise to spread the presentation of a topic over a considerable period and not aim to complete it in a few intensive lessons. The spiral plan of teaching in the elementary school may well be extended with certain modifications to the secondary school.

c) One of the most effective methods of firmly establishing a fact in the mind of the learner is through active recall of what has previously been studied. This means that the teacher should make use of the recitation in a considerable measure as a means of skilfully directing the pupil's attention to the recall of essential facts. In any case the recitation should not be utilized primarily to discover what the pupil knows—it should be a pedagogic device to instruct him in his learning.

d) In all learning there are likely to exist factors that mutually inhibit one another. The presence of interference has been emphasized by a number of experimental studies. Recently it has been shown that two naturally interfering activities, while they tend in the early stages of learning mutually to inhibit each other, may both finally be perfected in such a way that one can be carried on without any detrimental influence on the other. However, this interference can be eliminated only when both activities have been firmly established. This means as far as the teacher is concerned that he should not undertake to present something that he cannot give sufficient time to for its thorough mastery by the pupil. It would be unwise, for example, to have the pupil partly master two foreign languages at the same time, and leave them before the proper language habits had been definitely established. It should be the ideal of the teacher to make relatively complete that which he undertakes to teach. Completeness as an ideal does not mean that he should attempt to teach every detail of a subject (probably most subjects in the secondary school are taught in too minute detail), but it does mean that he should require a mastery of those parts of the subject that he deems essential for the work in hand.

Up to this point we have considered the teacher's art chiefly as consisting in making mechanical certain parts of the materials

of instruction, and we have emphasized those principles that have been discovered by experimentation and observation that bring about this mechanization in its most effective form. Thus, we have considered the laws that govern drill and the principles that must be observed in habit-formation; we have briefly outlined the most effective rules to be observed in the general technique of learning and noted the rôle of the teacher in these important particulars. However, we must recognize that the securing of mechanical modes of reaction is but one of the aims of teaching. The pupil must not only become proficient in the more habitual aspects of his work; he must not only have an ability rapidly and accurately to perform various tasks that are set before him; he must also at times be capable of arriving at new perceptions; of forming new conceptions, and of framing valid judgments. The art of the drill-master must not be despised, but the highest art of the teacher is leading his pupils to think. Here the aim is opposite to that which we have previously considered. Hence the teacher in developing this phase of his instruction must assume an entirely different point of view from that which engages his attention in the habit-building phases of instruction.

Concerning the way in which the mind works in these higher mental processes, educational psychology and experimental pedagogy have as yet much less definite to offer than in the field previously discussed. Yet the results obtained in the experimental psychology of the thought processes justify a few practical and basal conclusions.

a) Chief among these is the fact that we think definitely and clearly only when we have a problem that compels such thinking. Ordinarily our mental processes go on without much effort and largely in a mechanical manner, but this process is changed as soon as some obstacle is placed in our path, and the greater this obstacle is, provided that it does not plunge us into a state of emotional confusion, but is capable of being surmounted, the more developed the thought and the richer in content our mental states. The first important principle for the teacher to keep in mind reads, "If you wish to make the pupil think, confront him with some difficulty; present to him something that breaks up for the time his habitual modes of association and behavior."

How small a proportion of our teaching is of this thought-producing type; how few are the genuine problems that we present in a large part of our instruction, I am sure a little reflection will make evident. I have recently been informed by one who is making an extensive study of methods in secondary education that in the teaching of such subjects as physics and chemistry even the tendency seems to be (if the textbooks employed are accurate indications of the character of the instruction) to insist on the performance of a definite number of experiments in the laboratory, without apparent reference to the fundamental significance of these experiments and an attempt to relate them to the basal principles of the science. If this is true in the teaching of subjects that are so admirably suited to the stimulation of genuine thinking, how much more true is it in other departments of instruction where general principles do not lie so near the surface.

b) It seems probable that the most effective obstacles to the formation of habitual associations are those that are presented negatively rather than positively; that is, we hesitate and consider more carefully when we are told not to do something than when we are given a positive instruction. For example, the subject of an experiment is told that when a picture is presented to him visually he is to respond by a word naming the principal object in the picture, and in this case, while his responses are limited to one particular variety of reaction, and thus not entirely free, they are likely to be definite and ready and not to develop much debate or choice. On the other hand, if the subject is instructed that on seeing the picture he is to reply with anything that comes into his mind with the exception of giving a name to the objects in the picture, his mental processes are much more likely to be raised to the plane of deliberation and decision.

The teacher may on occasions advantageously avail himself of the principle of "negative instruction," as it has been termed, to develop thought. He should accustom his pupils, when there are real problems to be solved and intelligent decisions to be reached, not to follow the most obvious paths, but to hold in check the ready associations that tend to arise in the formation of "snap judgments" and superficial generalities. There are, perhaps, no subjects in the secondary-school curriculum in the teaching of which

this principle may not be applied, but it is particularly important in the interpretation of the facts of history and political and social science, and it can be brought into play in the comprehension of literature, music, and art. We ordinarily treat facts and principles in conventional ways; we are too ready to accept easily formulated opinions; we do not insist enough on a reasonable hesitancy in judgment.

c) It is often desirable to check the habitual flow of ideas not for the purpose of developing logical conclusions, but rather to give to the thought processes a richness and a variety that they do not possess on the lower levels of superficial association. We know from experimental studies that such a checking in the habitual attitudes of mind takes place when associations can no longer flow along in merely verbal channels. It is under these conditions that definite concrete imagery arises to give a body and a significance to the thought processes. It is particularly desirable in teaching such subjects as literature, where appreciation rather than logical judgment forms the goal of instruction, that vivid concrete imagery be developed. Much of the finest in descriptive and narrative literature is passed over unnoticed unless the essential pictures underlying the words and giving to them their significance arise in consciousness. I am sure that we would often be surprised to find how poor in concrete detail are the minds of many of our pupils.

The necessity of arousing vital imagery applies to a greater or to a less extent to all those subjects of instruction that are to be comprehended in concrete rather than in abstract terms. In ordinary teaching there is altogether too much mere verbalizing and too little detailed comprehension. The teacher must at times place obstacles in the way of these merely verbal associations, if he wishes to get the most significant values from those subjects that cannot be understood in their abstract and formal relationships. He must state his problems in such a manner, he must formulate his questions in such a way, that an appreciative attitude will be engendered in the minds of his pupils.

d) It has been adequately shown, not only that problems are necessary to engender thought, but also that the direction that the thought processes take varies in terms of the nature of the problem.

Both experiment and observation warrant the conclusion that we generally find that for which we are looking. When our minds are "set," either consciously or unconsciously, in a certain direction, our thinking follows that particular direction, and the details of our conscious processes flow along in a very definite channel. Our associations are formed in terms of our purposes, our intentions, our interests, our ideals, our prejudices. This natural tendency of thought has been aptly termed by James the "will to believe," and its existence has been clearly demonstrated in recent studies on the higher mental processes. This set of the mind may be technically termed an attitude. Attitudes of this nature appear to be of two different kinds. They are either definitely intellectual or are strongly tinged with feelings, and in the latter case they may be appropriately termed prejudices.

It becomes the business of the teacher to instil in the minds of his pupils the proper intellectual attitude and the proper feeling attitude (the prejudice). Sometimes he must make these attitudes clear and definite in the pupil's mind by raising them to the level of problems to be solved; and sometimes, on the other hand, he may convey through suggestion the attitude that the pupil is to take. In the more definitely intellectual work of the school the explicit problem attitude should be cultivated, but in the work that depends on appreciation and comprehension these attitudes are better suggested than explicitly stated. In any case the teacher should see to it that such attitudes are present in all of the school work that has for its aim either rational interpretation and comprehension or emotional appreciation.

The teacher must take special care to set different problems, to stimulate different points of view, to develop different feeling attitudes with different subjects of instruction. Too often the teacher approaches all subjects with the same general attitude; yet it is perfectly obvious that each subject or group of subjects in the curriculum must have its appropriate method of approach. Obviously the attitude in studying literature and art cannot be the same as in studying natural science; the attitude in which history is studied is not that which will work with equal success in studying a language, and so on. Further, the approach to a subject

often varies with the general purpose and with the grade of the instruction. The secondary school should not employ, for example, the same methods as those used in the university, nor should it make the equally fatal mistake of carrying over the attitude of the elementary school. The teacher must have definitely in his own mind the attitude that may be properly assumed in regard to the subject that he is teaching, and he should know likewise how to vary this attitude from time to time in accordance with the differing demands of different phases of his subject and of the different stages of progress of his pupils. At one time he may hold up the ideal of critical analysis, at another of subtle appreciation and sympathetic comprehension, this variety of attitude depending on the particular aspect of the subject that he is teaching. In any case, he must definitely formulate his own attitude and impress it on the pupil.

e) In developing proper intellectual and emotional attitudes in the mind of the pupil the art of questioning is of vital importance. Questioning may serve two quite different purposes. A question may be employed merely as a stimulus to set off a ready response, as, for example, in the common word-reaction experiment, when the subject is presented with a word, either visually or orally, and instructed to reply with the first associated word that comes to mind. Experiments of this kind have shown that under normal conditions the replies are generally superficial and without special significance; they are opposed to genuine thinking. Such questions as these are suited for the drill work in the school. They are asked when our aim is to habituate the pupil in certain forms of association and to further mechanize a relationship that has already been definitely established. The measure of proficiency under such circumstances is not deliberation but facility in response. In this case the rapidity as well as the accuracy of reply is the measure of the extent of the learning. "Rapid fire" drills and oral quizzes are illustrations of this type of questioning. The aim in the second class of questioning, however, is quite different from this. The latter has for its purpose the development of thought, and the test for genuine thinking is not ease and rapidity in forming associations, but generally quite the opposite. The skilful

teacher who questions with the latter purpose in mind will not rest content with the glib and ready answer to his queries. Under proper conditions the attitude of the pupil will not be that of replying as rapidly as possible with the first idea that arises in his consciousness, as in the case of the simple reaction test, but he will reply only after comprehension, comparison, and decision. The ready answer is often as much an indication of a lack of real knowledge as no answer at all. Recent detailed studies of the conduct of the recitation have shown serious defects in the way in which the questions are framed by the teacher and answered by the pupils.

Miss Romiett Stevens, who made an investigation covering a period of four years concerning classroom practice in the upper grades of the elementary school and in the secondary school, has shown a truly astonishing state of affairs in regard to the extent and the character of the questions asked, not merely by the poorer but by the better teachers. This study is published in the *Teachers College Contributions to Education, No. 48,* and should be read in detail by every teacher who is seeking to correct faults and arrive at better methods of instruction. Particularly instructive are the detailed stenographic reports of typical lessons that are incorporated in the monograph.

Miss Stevens has found that it is not uncommon in a single recitation period covering forty minutes for the secondary-school teacher to ask as many as one hundred and sixty questions. Many of these questions are of the "pumping" type; some seem to be merely an ingenious game in supplying a missing word and assume the character of the so-called "completion test." Generally there is shown very little effort to develop thought or to lead the mind of the pupil in any definite direction. The questions are often badly formed and not infrequently trivial in their nature. Neither pupils nor teachers seem to know where they are going; they are simply conscious that they are on their way. In Miss Stevens' opinion, "the large number of questions suggests the maintenance in the classroom, for a considerable portion of the time, of a highly strung nervous tension when there should be natural and normal conditions." It also "suggests that the teacher is doing most of the work of the class hour instead of directing the pupils in the doing."

There is an over-emphasis on memory work; there is not enough opportunity given to oral expression. The teacher does not take time to frame carefully worded questions, nor does he demand accurate and properly formed replies. Miss Stevens concludes that except in certain drill exercises a large number of questions is an indisputable index of bad teaching; on the other hand a small number of questions is not a proof that the teaching is good. Not only must the questions be relatively few, but they must be well framed and have a clearly defined purpose in view.

f) While the teacher should strive to develop in the minds of his pupils as many helpful attitudes as possible, there is one above all others that he must keep in the forefront of his endeavor. This is the attitude of reasonable self-criticism, the lack of dogmatic assurance, so necessary in all intellectual progress of a high order. The mature learner must always subject his own efforts to such criticism if he hopes to make substantial advance in independent learning and this attitude of mind must be inculcated in the pupil who has progressed beyond the mere rudiments of learning. The teacher, however, cannot expect the pupil to assume this attitude unless he exemplifies it himself. While of necessity he often speaks with assurance and authority, he can never with safety assume the rôle of the dogmatist with pupils of the secondary-school age. He must give the impression that he too is a learner, who stands ready to correct his opinions and reform his judgments when necessary and who is an earnest seeker for the truth; that he is one who in all questions that require deliberation is willing and ready to "think things out" with his pupils and be a sharer in their efforts to arrive at the ultimately valid. There is nothing more stimulating to the pupil than this genuinely thoughtful attitude on the part of the teacher. It cannot be successfully simulated, but when it is actually present it infects the pupil with its fine enthusiasm, and touches with its subtle magic even the dullest minds in the class.

IMPROVEMENT IN EDUCATIONAL PRACTICE[1]

ERNEST C. MOORE
Yale University

A little time ago the Sage Foundation of New York published a comparative study of public-school systems in the forty-eight states, an epitome of school facts in tabular and diagrammatic form of the greatest value to a general knowledge of educational conditions. The last page of this study gives the comparative rank of each of the forty-eight states as determined by ten educational features: the number of its children of school age who are in school, the value of its school plant, the actual expenditure per child, the aggregate school days per child in the state, the length of the school year, the average days of attendance per child, the relation of the state's expenditure for public education to its total wealth, the daily cost of the education given, the proportion of its pupils in high schools, and the average annual salary of the teachers in each state. It is, I think, safe to say that such a volume of information upon education has never before been compressed into so few pages or set forth in more lucid form.

It is interesting to ask, does this masterly statistical study tell the whole story of the condition of education in the United States? Does it indeed tell the most important part of it? Does it show the relative value of the schools? The heart of the school is the quality of its teaching. The figures are undoubtedly valuable for all that they set out to prove. They do not reveal the actual state and condition of education, though they do tell us a great deal about the conditions which surround it. A relatively low proportion of children of school age actually in school may, it is barely possible, represent a high degree of intelligence on the part of the parents of the non-attending children, for the main thing about a school system is what it does for its children when they come to

[1] Read at the meeting of the Harvard Teachers' Association, Cambridge, Massachusetts, March 15, 1913.

school. Expensive school plants may reflect merely a community's pride and desire to promote and advertise itself by erecting good public buildings. In the last analysis a school is a place not built with hands. Liberal expenditures for schools are not altogether incompatible with poor teaching. A long school year may represent a poor condition of instruction, a high average attendance may be due pretty largely to an efficient compulsory attendance department, a high proportionate expenditure for instruction may represent a community's pride or reckless wastefulness, for a thing is not necessarily good because it costs a great deal. It is rather apt to be bad for that reason. Relatively large numbers of students in secondary schools may be due to the presence of colleges or the absence of factories, and not guarantee that those who attend upon high-school instruction are being profitably educated. Those who are familiar with school affairs know that these are more than captious statements. The real school is behind all these appearances. The real educational welfare of the community persists in depending chiefly upon one thing—the kind and quality of the teaching which is given in the schools. Is there any one of these standards which measures and compares that? Each of them, if we could analyze it deeply enough, might be found to have a bearing upon that central fact and in some sense to proceed from it, but as they stand they do not give a satisfactorily clear report upon this most important matter.

But one of these standards reveals a great deal more about the state of the teaching, and therefore the quality and efficiency of the schools, than the others. That is the one which reports the salaries of the teachers, for it is just about as certain in teaching as in any other occupation that poor pay means poor hands and poor hands mean poor work. Indeed, it is rather more true, for real teaching is a kind of spiritual radiation which only a relatively healthy, enthusiastic, and achieving personality can give forth. The community or the state which places a low value upon the services of its teachers forces them as a body to hold their service cheap. But is the reverse true? Is a high rate of pay for teaching an infallible indication that the teaching is good wherever the pay is high? By no means. Some of the cities of the United

States which pay the highest salaries have poor teaching. Something must be added to good salaries to insure good teaching, even when only good teachers are employed to give instruction in the schools. The first of these necessary things is a good system of school administration, for a badly conceived plan of school management will breed distrust, feverish worry, and finally chaos, in the best teaching staff that can be assembled. Next after a wholesome and efficient plan of school administration comes good and inspiring leadership, and this is vastly important, for a good general will make an army out of poor material and will win victories with it, but a poor general will demoralize and prevent the best troops from winning a campaign. He contributes two things—*esprit de corps* and leadership. But right here our figure breaks down. The undertaking of the general and his troops is relatively simple. There cannot well be two views about the nature of their object, but in the ceaseless war which humanity is waging upon ignorance there are unfortunately many views as to what victory consists in, many counsels as to the form and substance of successful warfare, and no clear single battle cry. I conceive that one may be a good teacher, a good principal, or a good superintendent of schools in the commonly accepted sense of the term, and yet hold a philosophy of instruction and set before himself ideals of attainment and follow methods of procedure which make his daily work little short of atrocious. Perhaps in no other calling is the good so thoroughly the enemy of the best as it is in the calling of the teacher.

Mr. Chesterton has said that by far the most important thing for one to know about any man is the kind of philosophy he keeps. If a landlady is renting a room to a lodger, he says that the most important thing for her to know about him is not what his income is or his bank account is, but what his philosophy is; that when a general is about to fight a battle with an opposing army the most important thing for him to know about the army he is going to meet is not how big it is, nor who is in command, nor even what its plan of campaign is, but what kind of a philosophy is in the being of its soldiers. There can, I think, be no doubt of this. The most important thing at all times about any man is the kind of philosophy

he keeps. And by far the most important thing about any school system is the kind of philosophy of education which shapes the purposes and the activities of its constituent members.

Unfortunately there are many philosophies of education and most of them prevent what they undertake to accomplish. Anyone who is in close touch with educational practice will agree that there are at least three different kinds of schools with three different kinds of philosophy determining their teaching. The first kind of school believes that the great thing is knowledge. A few learned and peculiarly fortunate adults have it, most haven't it, and children never have it save as it is given to them. It is stored up in books, in courses of study, in the minds of teachers and other learned folks. The business of education consists in taking knowledge from the places where it is and putting it into the places where it is not—the empty minds of children. Schools are retail stores of knowledge and universities exist to conduct a wholesale trade in it. The best books and the best courses of study have put it up in properly weighed packages and carefully prepared doses which must be taken, one kind after the other, at regular intervals until an education has been administered. Recitations must be held to find out whether or not the daily dose has been taken—memory must retain it. Curricula are required to indicate the quantity which can be compressed into the memory of a school child. That superintendents and principals may know that teachers and pupils are handling the required stint of it, that teachers and parents may know that pupils are stocking themselves with it and retaining it in undiminished state, and that the children themselves may know how much they know, examinations are held with great frequency and regularity and all that has been accomplished is weighed and measured by them. This is the knowledge conception of education and a school system which is devoted to it is called an examination system of schools. An old and honored gentleman of my acquaintance once told me of his own theological training at Princeton fifty years ago. "Every morning," he said, "the professor brought our meat to the classroom cut up into nicely prepared little chunks all of the same shape and size. Then he handed them to us to take and two days afterward he looked

into our stomachs to see that we were retaining them in just the same form in which he had given them to us."

There is a right wing of educational philosophers who have recoiled from the crudities of this practice and have set up in opposition to it a conception of education which forsooth has little to do with knowledge but exists solely to train the mind. The mind, they say, must be exercised and strengthened, the wit must be sharpened before it is ready for its real work. Nature never intended that any man should do any real thinking with so crude, ineffective, and blunt an instrument as a mind that had not first been patiently exercised, strengthened, and sharpened for its work. One must eat sand before he can digest. Mental exercise is the great thing in education. Its aim is the symmetrical development of all the powers of the mind. Education, to be of universal value, must not be concrete, for that would particularize or partialize it. It must not allow itself to be limited to any one content, for it aims to impart a mastery of all. It must therefore confine itself to elements which appear in all contents. The only elements of a genuinely universal sort are the forms or symbols of knowledge. The mind must therefore be exercised upon these. To train a thinker one must be very careful that his mind shall have to do not with thoughts but only with the forms of thought while it is being educated. This is insured only by a long period of contact with certain studies which contribute nothing of much value in themselves, but exercise upon which puts the mind through its paces, and inures it to great activity by means of a well-ordered series of exacting, uninteresting, and in themselves meaningless tasks. This is the disciplinary philosophy of education and the schools which express it are mental-exercise schools.

The third kind of school believes both in knowledge and in mental training. But for it they cannot be separated. Knowledge for it is no ready-made outside thing which by any conceivable legerdemain can be put inside the mind; on the other hand, the mind is not so constituted that it can take strength by being exercised upon the forms of knowledge. Men made knowledge by thinking and there is no part of the knowledge which they have made which is final and not open to improvement by the

same means. To get knowledge the student must do as its original discoverer did; he must rethink it, remake it. It makes no difference what Moses thought or Plato thought or Euclid thought, until I think their thoughts for myself as my own. Science, history, literature, mathematics, all must be born anew in the mind of each student who studies them. Books are of value, courses of study are of value, and teachers are of value, not because they do our thinking for us, or insert knowledge into our otherwise empty minds, but solely because they help us to know what matters the race has found it most profitable to think about and put us to work at thinking about them. As there are no exercises known to gymnastic teachers which train the body as a whole but only those combinations of muscles actually engaged in them, so these thinkers believe there are no mental exercises that train the mind as a whole but only the specific activities which are at work. Whatever mental training results is always a definite ability to repeat its functioning upon a similar content. In other words, the training which we are able to give our minds is always a relatively definite content training and never a general formal training.

Education, according to this school, has one sole object, the using of the mind, not the getting of knowledge but the making of knowledge; not the exercising of the mind, but the using of the mind. I have said that this is a contribution which philosophy makes to education. It is distinctly the province of philosophy to point out what its sound first principles are. The question, What is knowledge, or how is knowledge possible? has engaged its most critical attention. It has an answer to that question and its answer is that knowledge is not and cannot be a given, but must be a construction. It is also the duty of philosophy to explain the behavior of mind and to make clear under what conditions it functions. The debt of sound education to philosophy is great, but the debt of philosophy to education is even greater, for it was one of the first discoveries of philosophy that its mission is to heal the soul, that is, that philosophy exists for the sake of education, that its one function is to assist the mind to a proper guidance of itself.

Is there any pressing need that the lesson which philosophy

teaches concerning the nature of knowledge and the behavior of intelligence shall prevail in the schools? No need is greater. It, and it alone, will clear up the confusion in educational theory. The object of education, we are told, is morality. Other counsels insist that it is preparation for citizenship, others that it is culture, and still others that it is to fit men to make a living. But the prime object of education is none of these things, though its secondary object is all of them. Its prime object is to make people use their minds, and if they are constrained to use their minds they will inevitably use them on the greatest concerns of life, morality, citizenship, culture, and productive activity. Or if education seeks first the kingdom of the spirit, all things else will be added unto it.

Better teaching, as I conceive it, consists then in setting our faces resolutely to the goal of requiring our students to use their minds, not to exercise them but to use them, not to fill them with knowledge, but to use them in making it each for himself. This is an old doctrine. It was Socrates who made this discovery, but if we took it seriously today it would work a Copernican revolution in what we are doing. What would it do for the teaching of mathematics? Herbert Spencer dared to "doubt if one boy in five hundred . . . . knows his Euclid otherwise than by rote." Does the proportion read the other way today? Yet Professor Young has pointed out that it is no more profitable or educative to commit the theorems and demonstrations of geometry than it is to commit the names in the city directory. Has our teaching of science, from which so much was expected, engendered the scientific mood in our students; does it lead to a scientific habit of mind; do those who pursue it acquire scientific method and learn to systematize knowledge, or do they instead merely learn a few facts which have been systematized? Professor Mann has announced his conviction that better results will not come from the teaching of physics until the teachers have a better philosophy of the teaching of that subject, and in the last number of *Science* he indicates quite clearly what he means by that. Take the venerable subject of Latin, which in the days of its larger functioning furnished such great and profitable opportunities to be active-minded to the

students who pursued it. It is my duty to see a good deal of high-school instruction, and what I have seen of the teaching of this study is not reassuring. I entered one classroom while the class was engaged upon that passage of the oration for Archias in which Cicero attempts to make the thoughts of his auditors rise to the nature of the poet's mission. To do so he quotes the words of "our" Ennius, author of the *Annals*, the father of Latin poetry—the poets are holy, for they seem, as it were, to be approved to us by a special gift and favor of the gods. I waited to hear what sort of a question the teacher would ask on such a passage as that, and it came: "Why is *videantur* in the subjunctive?" I went into another class in another school where they were reading the fourteenth chapter of that first book in which Caesar tells that the German chieftain Divico and his retainers came to a conference, and how Caesar addressed them, saying that they ought to be peaceable and give him hostages that they would be. Whereat the German chieftain arose and said that their fathers had taught them to receive and not to give hostages and he broke up the conference. I waited here for the question which the teacher would ask, for from that German love of liberty which would not submit to be crushed out by mighty Rome herself, much that we hold dear has come down to us, and there in that remote forest two mighty forces in civilization confronted each other for a moment and expressed their opposing ideals, and the question came: "What mood follows *uti?*" I went into another classroom in another school, where the students, who were beginning the Latin grammar, were engaged in writing a synopsis of the verb upon the blackboard. The work was going well, but one student attempted to write a perfect imperative form and that disturbed the peace of the occasion. When the teacher saw it, her reproof took the form, "You know that there is no such form in the book. You must follow your authority. Watch it closely and don't let this happen again," in place of calling attention to the impossibility of giving an order today to be carried out yesterday. Yet on the whole these were good teachers, who were doing the thing that was expected of them. Nothing so completely convinces one that what is wrong with our education is not the students nor yet the

studies which we attempt to teach, though some of them almost seem to have been chosen for their peculiar power to dull and stupefy the mind rather than their serviceability in interesting, occupying, and training the student who must pursue them. What is wrong is the teaching. It pursues the wrong methods, though the difference between a study pursued by wrong methods and the same study pursued by proper ones is the whole difference between perverting the mind and educating it. And it pursues the wrong methods because its philosophy of the meaning and function of the subject which is taught to the student is poor and mean. The case is not otherwise in the elementary school. We teach our pupils how to read but not to read. We teach them how to write without allowing them to desire to write well. They learn to perform the processes of arithmetic without comprehending their significance or the occasions for using them. We teach a schoolroom manipulation of language, called grammar, but it does not seem to reach beyond the schoolroom. Our geography tends to be an exercise with very confusing and difficult names, while history is a dry study which students commonly get by heart. How can we get better teaching of each of these studies save by remembering that there is not only a philosophy of instruction as a whole, but that there is a philosophy of each study, a body of considerations as to its meaning, the object to be sought in teaching it, the parts of it which are to be reduced to terms of habit and the parts of it which must abide in comprehension, and this philosophy of the subject or the course indicates the value of the subject to the pupil and reveals the method by which it must be presented?

We have been discussing the importance of weighing and measuring the results of instruction, of establishing standards of measurement and mathematically determining the uniformities of education, of making it an objectively valid science by introducing precision in the calculation of its causes and effects. All this is good and greatly to be desired, but there is danger that we shall overlook the fact that it is instrumental after all, that it is only a method of giving more exact definition to what we already know and do not take seriously enough to put into practice.

Mathematics will never tell us what the nature of knowledge is, though it will help us to find out whether we have it. It will never tell us the different ways in which the mind works, though it will tell us whether it is producing certain results. Mathematics will not tell us how to get *esprit de corps*, but it will help us to detect its presence. Just as the navigation of ships was made possible by the invention of the compass, and all the refinements of navigation which have since been developed have been built around that central discovery, so and not otherwise is it in education. Its central discovery is the self-activity of the student, that the one object and mode of education is through enabling him to use his own mind; and all else that can be known about education has for its object the application and the utilization of this principle. If each one of us could have a sort of Damascus road experience, or in some other way be converted to a sound philosophy of education, it would do for us exactly what it has done and is doing for that daily increasing company of men who from it have caught the glamor of the kind of teaching which ought to be and is to be because it ought to be; it would set us to work as it has set them to work, resolutely, at the task of clearing roads through the jungle of methods, courses of study, and profitless and uncertain educational practices and advice, for the self-active spirit to walk in.

There are two sides to human experience, a habit side and an accommodation side; or two means by which the human being maintains his adjustment; one is repetition and the other invention. If he depends upon either one of these alone his situation soon becomes perilous. Education as an art is not quick to improve itself; when it is not highly charged with theory, and is not keenly alive on the inventional side, it sinks into the dull automatism of habit and forgets the very thoughts which prompted it. Theory or thinking about its task rouses it to life again and sends it hot-foot in search of ways to improve its service. Education started in Greece with a great concern for theory. When it got as far west as Rome it lost its theory for the most part and lapsed into the automatism of an established institution. Since that time it has become conscious of its activity at times, but only locally and occasionally. There is therefore great promise in the present

world-wide movement of investigation to convert it into a science. But the greatest advantage of this movement will be its vitalizing effect upon educational practice. Hitherto the advance in theory has been real but it has been too sporadic effectively to quicken practice. Now that a renaissance of teaching is on, not only will it produce new results, but discoveries which have been far too much neglected will be brought to attention and put to work. Among them is the important rediscovery of the heuristic method which Professor Armstrong has been championing so valiantly in England, and Professor Young in the United States. Another is the laboratory method of teaching mathematics so skilfully employed by Professor Perry and authoritatively supported by Professor E. H. Moore. The largest outcome of all in the direction of method, according to Professor Henderson, is the use of the problem to educate the reason. If we employ the method of casting all that we would teach or study into the form of problems and of provoking our students to do the same, much is gained in making teaching a co-operative undertaking in finding; the mind is challenged, attention is focalized, work becomes definite and has an understandable purpose, searching is made necessary, valuing or selecting becomes the order of the day, what is found out and thought out is organized with reference to the problem, each student shapes and offers his contribution in his own words, and, above all, each is thinking for himself upon matters of common interest, which is the only valuable training of individuality. This life-giving method of using the mind in studying is clearly set forth in Professor McMurry's book, *How to Study*. No more effective contribution to better teaching has as yet been made.

THE PROBLEM OF WASTE IN THE COLLEGE LECTURE[1]

CHARLES F. RICHARDSON
Dartmouth College

A distinguished Harvard man, your friend and neighbor, Colonel Higginson, once said in a valuable little book, *Hints on Writing and Speech Making*, that one should never carry a scrap of paper before his audience. Another distinguished Harvard alumnus, who was the most effective speaker for many years in the General Convention of the Protestant Episcopal Church, when he was speaking under a ten-minute rule, and at the close the bell sounded, and everyone said, "Go on, go on," declined so to do, making the statement that a man who could not say all that was really necessary in ten minutes had no right to speak one. Now between those two bits of Harvard advice I am somewhat confused. I think, however, that I will take the second, if I may; and for the purpose of keeping as near ten minutes as possible I will presently bring a few scraps of paper before my audience. I am very glad, let me say, that Dr. Huntington's suggestion was not carried out by my predecessors; but evidently it belongs to me, speaking rather late in the afternoon of a rich day.

Now, sir, notwithstanding your too kind introduction, it might seem, and to me it does seem, absolutely fatuous to try to say anything new concerning lectures, here where so many have been delivered, and where at this moment I am sitting between lecturers of far greater competence than my own.

Didactic instruction is as old as humanity. When the first human said anything in the way of information to another, he delivered a lecture; and the last human remark, before everything caves in, will, I suppose, be a lecture. There were lectures in Palestine which influence us today, or will tomorrow, at any rate. Greek instruction was in the form of didactic lectures.

[1] Read at the meeting of the Harvard Teachers' Association, Cambridge, Massachusetts, March 15, 1913.

The lecture came all the way down through the mediaeval university. The word "lecture" is the regular expression for instruction in the English universities and in some American institutions, peculiarly those in the South, which have followed, or striven to follow, English lines. I remember a book published in England which put the word "recitations" in quotation marks, as indicating our method of instruction here—a method which was actually so unfamiliar on the other side that it needed to be characterized by inverted commas. We have had, for seventy or a hundred years, professional-school lectures. I have my father's notebooks of lectures in the Harvard Medical School as far back as the forties. Later, as you all know, and I don't need to dwell further upon this fact, we have had most successfully—and nowhere, I take it, more successfully than right here—the university lecture to graduates, and in somewhat less degree the undergraduate lecture to those of greater youth.

My sole topic, however, is the college lecture, and not the college lecture in general, but the limitations and failures which are connected therewith—the outs rather than the ins. And here, finally, I have no personal right to speak, but the circumstances of my twenty-nine years at Dartmouth have given me, perhaps, a rather vague fitness to speak a word for those circumstances.

Let me say, very briefly, that I began in a small, poor, ill-equipped, and isolated college, and I left two years ago a large, still not rich, reasonably well-equipped, and of course more or less isolated college. At first, with an imperfection which I know very well, I did all the teaching in the English department, and left undone a great deal more than I did. At my departure there were a dozen competent instructors to take up the work which I had imperfectly tried to perform for nearly three decades. The circumstances of the case, therefore, rather than any competence on my part as an observer, enable me to see the progress which may be made, or the retrogression which may appear, in a college which is passing from an almost strictly recitation system to a partially developed lecture system.

And let me also say, once for all at the start, that I heartily

believe in the lecture as a means of undergraduate instruction. I have got, with imperfect powers, better results from it than from textbook work; and am fully convinced that every college teacher should be able and willing to assume the pleasures and responsibilities of this mode of instruction, asking only for the opportunity to get at a great roomful of students for a series of hours. The ideal, the counsel of perfection, is the untrammeled lecture, guarded only by an examination at the end of the course. So much for the positive, for the optimistic, side.

Now let me turn for my remaining few minutes to the negative and somewhat gloomier, possibly superficially pessimistic, side. For, as I said, I am to discuss the outs rather than the ins of the case, and try to consider a few remedies for unquestionable evils encountered in certain kinds of courses or by certain kinds of instructors.

We all know that the "college man," as he calls himself, is at first a schoolboy, unfamiliar with lectures, on the one hand, or tutors, on the other. You recall the almost classic remark of Dean Briggs to the effect that a collegian claims to be a man, acts like a boy, and then reminds his somewhat confused instructors and guardians that they have forgotten that he is only a boy after all. The college man or the college boy, again, is often lazier than he was before or ever will be again—lazier, I take it, than under the German or the English tutorial system. He does not seem to grasp the ideal which is in the lecturer's mind. That ideal might be described in the words of a definition of the declaration of absolution once given by a High-Church Episcopalian. The definition ran as follows: "The declaration of absolution is an authoritative act of the church, sown broadcast to take root where it will." Well, I wish that answered rather better for the college lecture. But to continue the ecclesiastical figure: when the seed is sown broadcast the college lecturer too often goes on to think of weeds and brambles and stony ground and fowls of the air and other things which interfere in truly biblical fashion with the desired fruition. The facts of the case as regards the falling of the lecture upon the undergraduate mind are too often more accurately described in the words of a clever parody of Walt Whitman, which

the brilliant Sir Arthur Quiller-Couch wrote for the *Oxford Magazine* when he was an Oxford undergraduate. The first lines of that parody ran as follows, and they may well be put into the mouth or into the mind of many an American undergraduate:

> Behold, I am not one that goes to Lectures or the pow-wow of Professors.
> The elementary laws never apologize; neither do I apologize.
> I find letters from the Dean dropped on my table, and every one is signed by the Dean's name,
> And I leave them where they are, for I know that as long as I stay up
> Others will come forever and ever.
> I am one who goes to the river.

So that we encounter the student who does not care for our lectures or the pow-wow of professors, but prefers very much to go to the river, or what corresponds to the river in the inland colleges. That is to say, the modern average student—one of the perils of prosperity in a college—wants things, he says, in black and white, if he really wants anything at all. "If the lecture," he says in substance, "is poorer than the textbook, don't give it; if better, why don't you print it?" To which the poor lecturer somewhat feebly replies, "If the textbook is all, have at your bed's head twenty books clad in black and red, and don't go to college or university at all."

But as regards our subject, the very first element of waste that occurs to me is from the undergraduate's inability to take notes. That very interesting story which President Eliot told this morning of the lack of perception on the part of certain Boston clubmen reminded me of the old "Eyes and No-eyes" story, which we might expand into ears and no-ears, of the very first book I ever owned, the *Evenings at Home* by Mrs. Barbauld and Dr. Aikin. We think we see; we pretend to hear; but when we start to jot down things in notebook form we don't always succeed as well as the speaker desired. If everybody had taken notes of the wisdom which we have heard today, prior to the unfortunate time when I arose, I am not perfectly sure that all that the speakers said would have been permanently preserved exactly as they would have wished.

The schoolboy who goes from the "prep school," as he calls

it, to the college or university has sometimes a startling inability to take notes, and an equally depressing inability to appreciate the points which the lecturer tries to make. He determines to work the thing up later; or he says, "I believe I will run my chances." The worst of it is that the "soft snap" becomes softer still as we approach the realm in which the instructor most earnestly, but not always successfully, seeks to develop appreciation. To another body of teachers the other day I was quoting Professor Trent's remark on teaching the spirit of literature, in which he said, with a great deal of truth: "One should merely get a primer of English literature and then add to it sympathetic readings." That fits the undergraduates. But sympathy, when the instructor tries to elicit it, is sometimes received by the student, when you ask him what he has really got, with a courtesy which is not always a precedent condition of subsequent results.

Hence there is a certain misfit between the lecturer and the undergraduate writer of an examination paper; because we must have some tests, I suppose we all would admit. For instance, in overhauling the gems on both sides which I collected for twenty-nine years, I have found the following. And let me frankly say that sometimes the instructor is gratified by an unquestionably original remark, or written observation, by a student, which is actually as good as a Sainte-Beuve or a Matthew Arnold or a Lowell might have written. It generally doesn't go beyond a line or two, but sometimes you get it. On the other side, our cheer is dampened by such experiences as these. In those poor old days, when I was trying to do everything and leaving more things undone, I once had a course in Middle English, in which certain parts of Wycliffe's Bible constituted the textbook, and I gave a lecture on the Bible considered as literature—rather a large subject for a single lecture—in which I reminded my students that we were to consider that incomparable body of writings as a library, not merely a book; and that in all reverence, whatever our views of inspiration, whether Roman Catholic or Protestant, whether conservative or liberal, we should remember to read those books perfectly frankly and fairly, not trying to read Exodus as we should read Isaiah, or Leviticus as we should read James. In point of fact—

I said with such earnestness as I could command—there would be no irreverence in declaring that the Book of Esther was, as it were, an idyllic novelette; Numbers, a census report or book of statistics; Leviticus, a law book; the Psalms, a sort of Hebrew *Golden Treasury*, and Isaiah or Revelation, a great poetic foretelling. Well, a man of great football prowess listened to me and informed me, when he came to the examination replies which were supposed to cover that lecture, that the Bible was "a book of foretelling dreams, an idolic novelist, and a book of statics." A certain element of waste was exhibited there.

I once gave a lecture, which I won't summarize even as briefly as I did that on the Bible considered as literature, on Bunyan and his great work; and a student derived from it the information that Bunyan's great work was successfully to set forth, in remarkable literary form, "the terrible doctrines of damnation and salvation." I spoke of a certain delicacy in the nature and in the poetic work of the author of the "Elegy in a Country Churchyard," and was told at the end—all things come round to him who will but wait—that "considered as a man Gray was an old woman." Continuing to learn with reference to the literature of the eighteenth century, it was a matter of instructive information that "Tom Jones was the first novelist" of that century. And occasionally, in this same wastefulness, your sapient undergraduate will made a grand combination such as that in the mention of Poe's "The Rape of the Lock" and "The Fall of the House of Russia."

Are these arraignments of the lecture system only? Not at all, because in justice we should remember that almost as deep stupidities emerge from the recitation system. I have been quoting these from memory in preparing this little talk. A man after a recitation exercise, based, in the ancient years, on Taine, when I thought he got the idea, said, "The Anglo-Saxons were a brutal, pious, philosophical people," which seems to me to be a pretty good summary, after all, of Taine's celebrated chapter on the Anglo-Saxons.

Another bit of inaccuracy, after a course in which a very large textbook of my own was employed, was the mention of Whittier's fine poem "The Old Open Bucket." In the same course, sixty

printed pages by myself, in the student's hands, left the impression in his mind that Hawthorne, "although not strictly to be called morbid, was not an exceedingly jocular poet." And my chapter in my *American Literature* on Longfellow, expounded for a week, led another youth to say—we had been speaking of the meter of "Evangeline" and the meter of "Hiawatha"—that "Longfellow was the first writer successfully to use metrical verse."

Well, now, you see we have been turning from the lecture system to the textbook system, and we find an element of waste there. And if we were to turn to the sacrosanct preceptorial system I think we should find an element of waste even there. A very industrious and praiseworthily successful preceptor in my last year at Dartmouth, after a week devoted to his favorite subject, the Book of Job, in the incomparable King James Version, got the information from a student that the subject of that book was the flood and Noah the central character—a more learned reply than that which another successful and hard-working preceptor got when a student told him that Lot's wife was one of the figures described in the prologue to Chaucer's *Canterbury Tales*.

Dartmouth College happens to be the one of which I know most. I would not for a moment, by these selections, which reach over a pretty long period, leave the impression that the Dartmouth undergraduate is peculiar in the sort of wisdom which he displays before his instructors. Professor Hill of Harvard once said to me that after reading a lot of themes on the play *As You Like It*, I think it was, his mind got so confused that he had to take Shakespeare from the shelf and read the play through to find what in the world it was all about. There may have been at Harvard, as there have been at Dartmouth; there may have been at Yale; there may have been at other colleges, youths whose mentality is not as yet in a condition which can be called perfect.

Some illustrations of the element of waste in the college lecture I have thus informally been bringing before you. There is waste everywhere, and the whole purpose, I suppose, of today's discussion is to try to discover the causes of the waste, and having found the root of the evil, as Chaucer says, to administer the proper educational remedy, partly to ourselves and partly to those for whom or with whom we work.

But it seems to me that in any college the element of waste in the lecture is greatly increased by using it as an economical makeshift. Harvard College, shortly before President Eliot's illustrious administration, had about four hundred undergraduates. Dartmouth today has twelve or fourteen hundred. And other colleges have grown correspondingly. There is a very strong temptation, when the college grows numerically from 400 to 1,000 and from 1,000 to 2,000 or 3,000 in the undergraduate department, to make the lecturer out of the former teacher in little divisions of twenty or twenty-five—and there I speak feelingly. It is a dangerous and very undesirable method. If you believe in the lecture system get your lecturer and let him do the best he can with it. If you do not believe in the lecture system, don't be forced into such a makeshift as that of turning a man who would be a pretty good classroom instructor, on old-fashioned methods, to talking to two, three, four, or five hundred students, thus setting forth a system in which neither he nor the college would have believed had it had more money.

Now what are the remedies for this problem of waste? Here again I speak very modestly, because the problem of the college lecture is not that of the university, and not that of the preparatory school. It would seem to me, on the basis of my own experience, which is all I am undertaking to set before you, that the first remedy is to catch your lecturer if you can. If he be really in love with his subject and determined that it shall be taught to others, he will be like a torch around which many other little torches will gather in order that they may catch his light.

It seems to me also wise not to begin the lecture too soon in elementary courses.

My third point would be to combine it, especially in such subjects as history or physics, with assigned collateral readings or even a textbook. There is very little difference between the boy or girl in the last years of the high school or academy and the boy or girl in the first year of a collegiate course. The lecture in the high school or academy is an exception. The lecture as the sole or the chief means of instruction in the college or the university is therefore to many a foreign and unassimilatable thing.

Fourth—and I really think there is a great deal of importance in this little fourth suggestion—put a syllabus on the board. As I said at the start, I think a lecturer ought to be willing to assume the responsibility of making his subject interesting, even without these checks and balances which I am now setting before you. But I think most important of all, more important than everything else together, is a list of ten or fifteen topics which you follow extemporaneously in your remarks, and which the student, whether or not he goes any farther in his notetaking, copies on the blank page before him.

Fifth, in certain cases, don't leave the lecture too long undefended by quizzes—not always, but in certain cases. And I must say that when the lecture courses were about half as numerically portentous as they were in my last three years at Dartmouth, I tried two experiments, both of which were absolute failures. One was, in a course on English literature, to require the reading of Brooke's *Primer*, I then asking ten or twenty questions in the last ten minutes of the hour. That was a complete and a deserved failure. Equally unsuccessful, in a lecture course of one hundred, was the attempt to call on eight or ten different men at the end of the lecture to summarize the points which they had heard just before. Neither of those plans worked.

Sixth, let your helpers be men familiar with your own methods. That is absolutely indispensable.

Seventh, though the examination be the final desirability, sometimes guard it by arbitrary rules of attendance. I think there is no real inconsistency in this, as we have to consider the average man. I am reluctant to give this hint, but I fear that sometimes it is necessary. It seems to me as though the marking system for attendance ought to be utterly inconsistent with the lecture system, but sometimes it is necessary.

Then there is a final matter which time does not allow me, or competency permit me, to discuss at length. I will merely allude to it—namely, the preceptorial system. As I take it—and I shall be corrected if in error—the first suggestion of the preceptorial system was made by President Hyde of Bowdoin. It can be worked well and has worked well in a small college like that. The

merits of the system at Princeton are enthusiastically described by most of the preceptors and by some of the students, but there is a very serious couple of objections to it. If your diligent student likes the program of give and take, with six or eight others, for days and weeks and months in a little room, your idle student does not; and I am told by Princeton preceptors that it has been found better to have the brighter students together and the duller students together. But that is too large a subject for me to enlarge upon.

There is, however, an economic disadvantage in the system which might not be apparent at Harvard, but certainly would in a college like Dartmouth—namely, that your preceptor is ranked, on election, as of the grade of assistant professor. He either is or is not promoted. He being an effective remedy, in many ways, for the evils of the lecture system which I have described, if he is promoted, the small institution is bankrupt; if he is not, you have a body of somewhat unhappy and dissatisfied middle-aged gentlemen. I once heard the then President Wilson of Princeton—now President of the United Sates—deliver a delightful lecture at the installation of President Richmond of Union, on the "Art of Being a College President." And he said, "To be a successful college president one must be a fighter. He must have a policy and must carry it right through, for," said he, "college professors are more sensitive, if possible, than members of church choirs." "Some of them," he went on to say—as I recall at this distance of time—"are to be convinced, some to be cajoled, some to be conquered, and some to be ignored." The sensitiveness of the college instructor naturally becomes rather great, to return to my point, if he finds himself at forty or forty-five or fifty an assistant professor, with no chance of promotion except by way of transfer to another college. I am perfectly justified in bringing in that criticism of what would otherwise be rather a capital remedy for the element of waste of which I have been trying to speak.

Finally, I have, though not as badly as I feared, exceeded my ten minutes. Success or failure, under any system, as has been said by speaker after speaker today, depends, of course, mainly on the personal impact of the man.

DISCUSSION

COLLEGE TEACHERS OF EDUCATION

Abstracts of Discussions of Papers at the Philadelphia Meeting

on psychological characteristics of the intermediate grades (1)[1]

The various viewpoints so far expressed admirably supplement each other. Dr. Judd has demonstrated the existence of periods of least development, and located them about the fourth grade in many school systems. The last speaker calls attention to ample evidence that the grades in which these "nodes" occur vary with locality, and insists that such variation makes valid conclusions impossible. Personally, I believe that the most fundamental conclusion can be based upon the very fact of variation. That is, since the "nodes" occur at varying ages, responsibility is administrative rather than subjective and lies with the school system rather than in some unavoidable subjective condition. Both Dr. Judd and Professor Bagley assume this when they propose their conflicting remedies—*less* drill work in the fourth grade and *more* drill work in the fourth grade. My own belief is that the "node" is not wholly avoidable, because, now and again, accumulating knowledge reaches a point where its organization must be made familiar by repetition, and where the more complex activities that become essential must be transformed into certain habits. I agree with Professor Bagley that this means more drill rather than less, or if not more drill, more efficient drill on essential relationships, where usefulness is due to definiteness and increasing complexity.

Since a small part of each school day is adequate for essential drill, and only a small part can be made effective through drill, Dr. Judd is probably right in his insistence that the fourth grade devotes too much time to drill, to the exclusion of the more many-sided phases of school work in which fourth-graders are naturally interested. Drill and many-sidedness are not mutually exclusive, but supplementary.

(AFTER DR. JUDD'S SUMMING UP)

I cannot refrain from a final word of protest against the assumption that drill is repressive and wasteful, and that children's interests should be determining for the course of study. While innate tendencies point

[1] Such numbers refer to pages in the 1913 *Yearbook* of the College Teachers of Education, published by The University of Chicago Press.

the way to the line of least resistance, the relationships and the habits essential to the most useful activity at each stage of development must at times be developed in the face of natural tendency. Self-activity is not always the readiest means to education. It is its essential end in the realization of which mechanical memorizing, drill, and routine are always essential factors. If we have not reacted too far from the old-time verbatim instruction, we have been getting too far away from the drill essential at each stage of development to the certain mastery of the definite relationships and increasingly complex systems of ideas and habits on which self-progress and independent activity depend.—A. D. YOCUM, *University of Pennsylvania.*

ON A STUDY OF ASSOCIATION IN CHILDREN OF THE ELEMENTARY SCHOOL BY E. E. JONES, INDIANA UNIVERSITY (16)

The study is entitled "Association in the Elementary School" but it would be more logical to call it "An Additional Series of Tests for Elementary-School Pupils." Ten tests are described and these involve motor, perceptual, and judgment processes quite as much as association. Only one of these tests, the third, which deals with the writing of opposites, can be classified strictly under the head of association. The first, fifth, and tenth tests are essentially motor but only the tenth and perhaps the first appear to be so recognized; the second concerns perceptual rapidity; the fourth involves the factor of logical memory; and the sixth, seventh, eighth, and ninth deal respectively with addition, subtraction, multiplication, and division—processes that give but little insight into associational peculiarities. But all these tests do have the merit of allowing objective grading.

It is in the record of the results obtained, where most would naturally be expected, that the study is most disappointing. We are told that "there is a positive correlation throughout between the efficiency of the pupil in the performance of school tasks and the score made in the association tests," but the amount of correlation is not given. Again, without giving us the figures, we are told that "as we advance in the grades the medians of the association records of all the pupils tested in each grade show a steady increase by almost a constant quantity for each grade." The records of a feeble-minded boy found in the fifth grade are given, and with the exception of being told that these records are below the median of the records of the third graders, we are given no basis of comparison. The Binet scale was applied to a number of exceptional cases and the results were found to agree closely with those

found by the association tests, but no figures showing this agreement are given.

The fact that these simple tests appear to give a measuring scale for native intelligence and psychological age is certainly suggestive. The chief desiderata still to be worked for in perfecting mental tests, it seems to me, are simplicity, objective grading, and appeal to the basal mental powers and functions. These should include the emotional as well as the intellectual reactions. We need also to distinguish between tests upon native ability and psychological age, and tests upon typical school achievements, or pedagogical age. We ought to have measuring scales for the typical geographical, historical, arithmetical, and other conceptions and performances of the third-grade child, the fourth-grade child, and so on. The Courtis tests perform this service in a measure for arithmetic, but in the other subjects we have not even made a beginning in this direction.

The fact that there is apparently no correlation between the quality of the sense organs and mental performance came as a surprise to Professor Jones and his co-workers. It came as a surprise to me also about seven years ago, when making my study on *The Field of Distinct Vision*. I found, for example, that there is practically no correlation between the horizontal extent of acute vision and reading rate, between visual acuity and reading rate, between sensory defect and reading rate, and between the horizontal extent of vision and the A test. Barring, of course, cases of extreme sensory defect, the cause of the difference in reading rate and other perceptive functions must be looked for on the central, and not on the peripheral, end.

In conclusion Professor Jones suggests that we need two innovations in our school systems—the psycho-clinicist and the scientific school administrator. No doubt we need these persons and they are coming, but could we not also make good use in all larger school systems of a specialist who might be called director of research? Every large school system should be adding its quota to educational science through carefully directed research. This would not only give permanent contributions to educational science, but would also immediately enliven the school work. Various methods of instruction, courses of study, types of management and organization, and so on, might be tested abreast in various parts of the city. While suggestions and initiative might well come from many sources, for results to be obtained the experiments would have to be carried out under the direction of one competent and well-trained scientist.—W. C. RUEDIGER, *George Washington University*.

ON INCIDENTAL INSTRUCTION BY J. L. MERIAM, UNIVERSITY OF MISSOURI (23)

The values of instruction depend upon two things—the nature of what the pupil learns and the amount of time and energy consumed by the learner in the process. What may be learned or acquired by the pupil is either automatic and habitual responses or conscious and rational responses. The habitual responses are of value, but relatively they are of much lower value and much less in amount than the conscious, rational responses. The latter alone provide for the analysis of a situation, for taking the initiative, for meeting new situations. Incidental instruction will result in more of that kind of knowledge which makes progress possible.

Then the whole problem of method may be considered from the standpoint of repetition. Repetition is necessary in school where the appeal to the instinctive forces is more difficult to make, but the amount of time and energy consumed in the learning may be so great, owing to repetition, that the learning itself is a net loss to the pupil. The problem of instruction is to secure the learning with the minimum of repetition, the minimum of drill. Repetition and drill reduce motive, without which there can be no economic learning. By the choice of rich material for study and the incidental learning of the form, not only will the acquisitions be more valuable but the process will be more economical. —J. N. DEAHL, *West Virginia University.*

ON A NEW METHOD IN THE HISTORY OF EDUCATION BY H. H. HORNE, NEW YORK UNIVERSITY (31)

Any attempt at solving the problem of the better functioning of the history of education demands consideration. How far Professor Horne's scheme is new and how far it meets the difficulties are the questions before us. For the immature student a textbook developing the several topics would seem a necessity. Whether such a book could avoid undue disconnectedness without too much repetition remains to be seen. On the other hand, to use the proposed plan with students already at home in the subject is the common procedure. Thus, however we may take it, a substantial contribution seems improbable.

In addition to more obvious ways, the history of education should function by aiding the student to analyze, for more adequate criticism, the complex body of contemporaneous education. To question what is customary—a matter of the utmost importance—demands as *sine qua non* a novel point of view. The history of education affords such novel viewpoints, particularly in the relatively simple historic systems

made by emphasizing now one, now another, of the several elements found in our present complex system.—WILLIAM H. KILPATRICK, *Columbia University.*

Ten years ago I came to the conclusion that the course I was giving in the history of education was of little professional value. Treated as a review of educational opinion and practice it was superficial and consequently irksome and negative in results. Treated as the problem of determining the deepest causes of educational ideals and institutions, it became a history of civilization and thus became chiefly cultural and at the same time cumbrous beyond all control. Accordingly I attempted to organize it from an entirely new standpoint, viz., that which views the teacher as facing two radically diverse problems: the one intellectual —the mastery of the psychology of the child and of the principles of method; the other dynamic—the problem of adjustment to the social forces which have created the school and determined its structure, and which sustain all its processes and give them their energy of persistence and direction. Once my students were made to understand that from the moment of their entry into the schoolroom they would be confronted, indeed encompassed, by forces so persistent and dominant that their attempts at betterment might be obstructed or completely thwarted; that these forces were not merely local, temporary, and incidental, but structural, universal, and gaining their astonishing momentum from sources far back in history; that, indeed, there was absolutely no way of comprehending or measuring them or adjusting oneself intelligently to them except by a resort to history—once these things were comprehended, I say, there was no lack of interest. It only remained to reverse the order of presentation—to put first the legislation, the curriculum, the methods, the ideals, which were the product of historic forces, and literally drive the students to history as the only solution of their problems. This method made history really function in professional equipment.—GEORGE M. FORBES, *Rochester University.*

Professor Horne's paper, in my opinion, points the way for making the history of education practical for undergraduates. As it has been taught, it is well adapted to the needs of graduate students doing advanced work, but not to the needs of undergraduates. The pedagogy which can be taught in the limited time accorded to it in undergraduate courses should be confined to the most practical aspects of the subject. What the undergraduate needs is such training as will enable him to teach skilfully and manage effectively a school or a class. The

main emphasis in undergraduate study should therefore be placed on methods of teaching subjects which he is likely to teach. He ought to be taught the elements of educational psychology in order that he may know the immediate reasons for method; he ought to be taught school and class management. These are the phases of pedagogy which will enable him to teach school, and, yet, these are the very aspects which the academic members of the college faculty are least inclined to accept for credit toward a degree; they are said not to have a "culture value." To conciliate their colleagues in the academic departments, professors of pedagogy in many colleges have slighted these subjects and have unduly emphasized the history of education, the philosophy of education, principles of education, and educational psychology. The result is that, as a rule, graduates of colleges who take courses in pedagogy often do not show in their teaching any effects of their professional training. The value of such training at present is largely taken on faith by superintendents of schools and high-school principals. Unless the colleges give more practical training, the different states will organize state normal schools of college grade for the training of secondary-school teachers, and professorships of pedagogy in the colleges will not be permanent. We are at the parting of the ways in this matter. A number of states, including New York, Michigan, Iowa, Colorado, Missouri, and South Carolina, have already established normal schools of this character. The question of establishing such a school in Illinois has been agitated for several years. The permanency of professorships of pedagogy in colleges will not depend upon what academic colleagues think of the value of their work, but what superintendents of schools and principals of secondary schools who employ their graduates think of it.

We do not distinguish sharply enough between courses in pedagogy for graduate students and courses for undergraduates. The undergraduate has not the preparation required for the scholarly study of the history of education. As a rule, he knows little of the history of philosophy, often not enough of political history, and nothing of ecclesiastical history, all of which are necessary to interpret some of the periods of the history of education. As a rule, his knowledge of psychology and of the biological sciences is too limited to enable him to pursue with much profit a scholarly course in principles of education. Such work should be reserved for the graduate school. There are only two phases of the history of education which, it seems to me, are adapted to the needs of the undergraduate: one is the history of the theories of educational reformers which will give him the genesis of modern educational

ideals; the other is a history of method in connection with the instruction in methods of teaching. Professor Horne's plan, it seems to me, suggests the most effective way of treating these two phases of the history of education in undergraduate work.—THOMAS M. BALLIET, *New York University.*

ON AN EXPERIMENT WITH THE COURTIS ARITHMETIC TESTS BY E. E. RALL, UNIVERSITY OF TENNESSEE (36)

Extended use of the Courtis tests has convinced me that they are the most convenient and reliable means we have for determining arithmetical abilities. I believe that they are a valuable aid to the teacher in indicating the individual needs of pupils. At the same time the following points call for experimental investigation: (1) The Courtis tests are all speed tests. The pupils work under pressure. In perhaps no other situation is such a demand made upon them. Are the results of such tests an adequate measure of the normal arithmetical abilities of pupils? Has the constant strain for speed any disturbing effect upon the results? (2) Such a speed test may be very confusing for the pupil the first time. To what extent does adaptation to the conditions of the test change the rating of pupils? This has been pretty definitely determined by Otis and Davidson for eighth-grade pupils in the addition test, but each test should be worked through from this point of view. (3) If precisely the same reasoning tests are used at intervals of four weeks, will not memory soon prove a disturbing factor in the results? In the present experiment the reasoning problems were changed for all but ten pupils. It would be interesting to know whether there was any appreciable difference between the scores of these and of the other pupils.—J. CARLETON BELL, *University of Texas.*

ON THE PLACING AND PROMOTION OF TEACHERS

It was the speaker's conviction that certain unhappy conditions attaching to the teaching profession are in large part to be charged to defective methods in placing and promoting teachers. Most prominent among these are: insecurity of tenure; itineracy; lack of vital relationship between teachers and community; unprofessional conduct on the part of teachers; the failure of teachers to grow in grace and power; time-serving; insufficient salary. To minimize such evils is serious and pertinent work for educators.

Three main lines of activity in the way of improvement were indicated as fairly obvious, all three to be undertaken through interinstitutional and interstate co-operation: (1) careful determination and state-

ment of facts, causes and effects of the evils enumerated, the relation to these evils of teachers' agencies, the various forces now effectively at work to improve such conditions; (2) the devising and perfecting of a nation-wide scheme, or schemes, of placing and promoting teachers—a scheme which will to some extent ameliorate bad conditions through saving the teacher's soul and money; (3) a nation-wide discussion of the ethics involved in seeking, accepting, or leaving a position, and in seeking, employing, promoting, or discharging a teacher. It would seem that reasonable educators, teachers' agencies, and citizens in general, after full discussion, would agree to at least the propositions and implication of such a code, for example, as the folllowing:

1. Poor teachers should not receive positions as long as there are better teachers without them.

2. The more expert teachers should be in the more difficult positions.

3. The more difficult positions should be relatively the better paid ones.

4. The individual genius of the teacher should fit the peculiar requirements of the position.

5. Teacher and position should fit each other in such a way as to conserve the ethical, moral, and professional spirit of the teacher, and especially of the new teacher.

6. There should be promotion, but for meritorious service only.

7. Change of position should be subject to the satisfaction, always, of at least three requirements: (*a*) the good of the school the teacher is leaving; (*b*) the good of the school to which the teacher goes; (*c*) the professional good of the teacher making the change.

8. Personal and political "pull" or influence must be eliminated from all appointments; merit and adaptation are the only legitimate considerations.

9. Teachers of equivalent preparation should be kept in active competition with each other.

10. The method of bringing teacher and position together should be such as to exert an influence upward on salaries and for security of tenure; at the worst it should never tend to work against these ends.

11. "To whom it may concern" or similar testimonials should never be written; and no teacher should ever be the custodian of these or any other testimonials descriptive of himself.

12. Superintendents and others in authority over teachers should not get rid of undesirables by writing glowing testimonials in their behalf.—FRANK E. THOMPSON, *University of Colorado.*

EDUCATIONAL NEWS AND EDITORIAL COMMENT

HIGH-SCHOOL FAILURES

On March 6 the *Journal* of Flint, Michigan, discussed at length the statistics of failures in the high school of that city. The principal of the high school had prepared a statement in response to the request of the superintendent. The table included in this statement is reproduced in full as given in the *Journal*.

	Total Enrolled		Dropped Out Early		Failed		Passed		Percentage Failed
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	
By grades—									
Ninth	285	428	38	50	68	42	179	336	17.6
Tenth	256	352	38	40	63	54	155	258	22.1
Eleventh	140	227	20	12	26	18	94	197	13.1
Twelfth	122	142	8	7	12	14	102	121	10.4
Total	803	1,149	104	109	169	128	530	912	17.1
By departments—									
English	161	254	15	28	30	21	116	205	13.7
Latin-Greek	67	136	24	18	20	10	23	108	18.6
French-German	50	141	11	7	6	5	33	129	6.3
History	126	137	18	12	25	18	83	107	18.4
Mathematics	186	234	23	27	50	41	113	166	33.7
Science	135	110	8	8	22	7	105	95	12.2
Commercial	78	137	5	9	16	26	57	102	20.9
Total	803	1,149	104	109	169	128	530	912	17.1
By teachers—									
A	29	51	3	5	2	2	24	44	5.5
B	47	77	4	8	8	4	35	65	10.7
C	45	49	8	3	8	6	29	40	16.8
D	51	83	1	0	7	15	43	68	16.5
E	23	62	11	9	4	1	8	52	7.7
F	37	64	8	9	7	13	22	42	23.8
G	31	53	8	6	10	5	13	42	21.4
H	64	68	2	6	10	4	52	58	11.3
I	42	69	7	11	15	8	20	50	24.7
J	45	69	7	12	15	6	23	51	20.0
K	20	62	8	3	2	5	10	54	9.8
L	30	79	3	4	4	0	23	75	3.9
M	62	69	3	4	16	14	43	51	22.5
N	53	84	9	10	16	19	28	55	29.6
O	63	55	11	7	20	11	32	37	31.0
P	48	33	2	1	6	5	40	27	14.1
Q	71	42	6	2	12	3	53	37	14.3
Total	803	1,149	104	119	169	128	530	912	17.1

The matter was a subject of discussion at the meeting of the Board of Education and several different views were taken both as to the desirability of publishing the report and with regard to the significance of this report as compared with the experiences of other cities. The difficulty of making such a comparison as was desired results from the fact that there is no accessible information from other school systems in this matter.

The *Journal* reports that it called up several school superintendents by long-distance telephone and tried to get some comments on the figures here given. These long-distance telephone reports from Lansing stated in general that the number of Seniors in the high school receiving unsatisfactory marks amounted to 4.5 per cent. Six per cent were unsatisfactory in the Junior class, 10 per cent in the Sophomore class, and 9.7 per cent in the Freshman class. These figures do not give an account of the withdrawals from the school.

From Lapeer, which has a small high school enrolling 175 pupils, the enrolment at the end of the semester is reported as 169, the number who failed in one or more subjects 13, or 6.5 per cent of the students; the number who failed in two or more subjects was 4.2 per cent, giving an average percentage of failure of those enrolled of 1.7 per cent.

Further information of this sort is very much needed for comparative purposes. Attention also turns at once to the large number of failures in mathematics.

MORAL EDUCATION

In connection with the meetings of the Religious Education Association held in Cleveland during the second week of March a conference was called on social education in the high school. This conference met in four sessions and dealt with the various phases of moral instruction and social activity in the high schools. At the first session Professor Sharp of the University of Wisconsin discussed in detail the plan which he has several times presented to high-school teachers for a course of direct moral instruction in the high school. Professor Bigelow gave a paper on sex instruction in which he advocated a very comprehensive treatment of the whole problem. This problem should be dealt with not as a special topic, but there should be a broad, intelligent treatment of all the social relations that attach to this problem. Two principals of high schools gave at later sessions of this conference full account of the social activities going on in their respective schools. These were Principal Johnson of the University High School of the University of Chicago and Principal Davis of the high school at Grand Rapids, Michigan. The

interest aroused by the report of these practical experiments in actual social work with students in high schools was evidenced by the numerous questions that were raised with regard to the possibilities of extension of these lines of work. At the last session the problem of reconstructing the high school in some measure so as to meet the needs of adolescent pupils more adequately on the moral side was discussed by Principal Rynearson of the Pittsburgh High School and Professor Bagley of the University of Illinois.

This series of conferences was preceded by a symposium on the general topic of "Social and Moral Education in the High School," which appeared in the *Journal of Religious Education*. The papers which were presented at the conference will be reproduced in that journal. High-school teachers will find therefore in the current numbers of that journal much material that will be of direct interest to any student of high-school problems.

COLLEGE-ENTRANCE REQUIREMENTS

A monograph on college-entrance requirements has been issued by the Bureau of Education dealing with all of the different types of entrance requirements represented in American colleges and universities. This pamphlet is prepared by Mr. Clarence D. Kingsley, who is known as the chairman of the National Education Association Committee on the Articulation of High Schools and Colleges. The pamphlet is useful in that it presents in a comprehensive way the great variety of practices in this matter in different institutions. The pamphlet, however, goes farther than merely to present the facts. It advocates a very much more elastic arrangement of entrance requirements than has been heretofore considered possible. The special points on which this pamphlet lays emphasis are the desirability of materially reducing the foreign-language requirement which is very common and the recognition of the vocational and other non-academic courses which the well-organized high school accepts for graduation.

The pamphlet makes it clear that radical and rapid changes are taking place in this matter of college admissions.

LEGISLATION FOR THE HIGH SCHOOLS OF INDIANA

The state of Indiana has adopted a law which provides for uniform textbooks in the high schools of the state. For twenty-four years there have been uniform textbooks in the elementary schools. The recent legislature directs the State Textbook Board to select books in the following subjects: algebra, geometry, commercial arithmetic, history

(United States, ancient, mediaeval, and modern), civil government, commercial geography, physical geography, history of English literature, history of American literature, English composition, Latin. The board shall also select four elective textbooks in each of the following subjects: botany, zoölogy, physics, chemistry, agriculture, and agricultural botany. The board may select single or elective textbooks in any additional subjects not included in the above lists when such subjects are taught in any high school or whenever any high school shall determine to teach such subjects.

This law was passed on the ground that it will tend to furnish a uniform basis for the course of study in the public high schools of the state and will materially lessen the price of books.

The legislature also passed a law known as the high-school inspector's law. This law creates an official to be appointed by the state superintendent of public instruction with the approval of the state board. He will be in general charge of the high schools throughout the state and will secure so far as is possible uniformity in the work of the four hundred commissioned high schools and the one hundred and fifty certificated schools which he is expected to visit each year.

SUMMER SESSIONS OF SCHOOLS

A number of news items similar to the following call attention to the general movement which is developing all over the country for summer schools for special students. "It is reported from Great Falls, Mont., that at last night's regular meeting of the board of trustees of the Great Falls school district it was decided to conduct a summer school during the vacation months for conditioned or failed pupils in both the grades and the high school." This movement to economize time of pupils who find themselves in difficulty with the school program has become sufficiently general to be described as a common matter. There will be many summer schools in different parts of the country. It is very desirable that information with regard to these summer schools be carefully kept so that we may shortly have an exhaustive study of the advantages or disadvantages of this type of work. Sooner or later there will be summer schools conducted for pupils who have not failed. If it is worth while to save the time and energy of those who have found themselves in difficulty with the school program, then certainly it is worth while to economize the time and energy of the pupils who have succeeded with their school work. There is more loss through vacations, there is more failure on the part of children to use their time properly during the

period between school sessions, than can be realized by anyone who has not made a careful study of the general behavior of school children during the summer months. Most of the children in the United States are not on vacation in the ordinary sense of that term. Most of them are obliged to remain near their homes and are very greatly disadvantaged by the withdrawal of educational opportunities. That this should appear first of all in the case of those who are deficient is perhaps natural, but there ought to be a clear recognition of the fact that these special cases indicate a general difficulty which ought to be overcome.

AGRICULTURAL EDUCATION IN DENMARK

The Bureau of Education is undertaking a general study of rural conditions and rural schools in all of the civilized countries where progress has been made in educational matters. At the present time a group of representatives of the bureau are studying the folk high schools of Denmark. These folk high schools are special agricultural schools for small landholders. Eleven-day courses are provided for adults. These courses open on the first and third Tuesdays of every month throughout the twelve months of the year. Husbands and wives frequently attend these courses together. Instruction is given in various phases of agriculture and domestic economy. More elaborate courses extending through six months are given in horticulture and other subjects which are needed by the sons and daughters of the small farmers. The movement for the development of rural life in Denmark is very vigorous and these educational institutions constitute one of the agencies employed by the central Danish government in promoting the welfare of the rural population.

CHEMISTRY IN SECONDARY SCHOOLS

At a meeting of the Teachers' Association of Alabama held during the last week in March the subject of introducing elementary chemistry into the high school and even into specialized industrial schools was taken up. The introduction of elementary chemistry was urged by one of the speakers in the following terms:

> The subject is a highly practical and useful science which touches almost every side and phase of our material welfare, whether we consider its relation to the preparation of the foods we eat and the clothing we wear, or whether we investigate its bearing upon the fertilization of our soils, the conversion of some of our crude farm products into materials whose value is thereby enhanced

many fold, or the transformation of the raw mineral wealth of the earth into finished metals and metallic products which find a thousand different applications in our twentieth-century civilization.

Foreign visitors who come to this country frequently call attention to the fact that we have omitted from our high-school organizations one of the types of schools that the Germans have developed as of great importance in their industrial education, namely, schools of chemical engineering. The reason why practical courses in technical chemistry should not be given seems very obscure when one considers such practical reasons for introducing these courses as are above cited. On the other hand, it cannot be doubted that from the psychological point of view chemistry suffers as compared with physics. In physical phenomena one sees the processes which are under investigation. One can see the movement of a physical apparatus. Even in the biological sciences one can observe steadily for a long time the facts of plant growth or animal life. Chemical processes, on the other hand, are not accessible to direct observation as are physical processes, and it is not possible to subject them to continuous observation as one may many biological facts. There is a certain indirect scientific reasoning involved in the understanding of chemical phenomena. This psychological fact may be the real reason why courses in chemistry are not easily introduced into secondary-school courses.

THE IOWA REORGANIZATION OF HIGHER INSTITUTIONS

The Iowa reorganization is not to be carried out as originally planned by the State Board of Education. During the whole of the present session of the legislature the most vigorous discussions have been carried on touching the rights of the board to make the changes proposed and touching also the wisdom of the changes if they are within the authority of the board. It appears that the board did not adopt the plan with as large a degree of unanimity as was at first supposed. This furnished the way out of the dispute. It is now ordered by act of the legislature that no changes shall be made unless seven members of the board concur. This brings matters back to the organization which existed before the war and each institution for the present, at least, holds its own.

VOCATIONAL COURSES IN NEWTON, MASSACHUSETTS

A pamphlet entitled *A Novel Experiment* comes to hand from the Newton Vocational School printshop at Newtonville, Massachusetts. Quoting briefly from one of the paragraphs in this pamphlet, we have the

following statement of the problem which is discussed by the teacher who has successfully solved a grave difficulty in our school organization:

> When it was found some years ago that in the Newton schools, as in the schools of many other cities, there was in the eighth grade of the grammar grades a rather large number of girls over fifteen years of age for whom there was little hope of promotion to the high school by the ordinary methods of school grading, a special class for these girls was organized in the Newton Technical High School.

This class of transferred girls was made up of about fifty girls who were somewhat over age. Thirty-five out of the fifty pupils were retarded one grade. The causes of retardation as given on the personal record cards which are sent with the pupils from grade to grade and which contain full information about each pupil were, first, sickness by which a grade was lost, second, late entering of school, third, unfortunate home conditions, fourth, slow mental development. The work which was given to these special girls was aimed to arouse their interest and their activity. An effort was made, as the pamphlet tells us, to cause the girls to realize the advantage to be given them in the special class. They took up vocational studies and the vocational aim aroused them to take up other work. They took up work of a practical sort in housekeeping, sewing, millinery, and expense account. Work in hygiene was made very practical and helpful. Commercial geography was given and illustrated by talks with the reflectorscope. All this work was recognized as higher work than carried on in the elementary school, although it did not follow at all the lines of the ordinary high school.

The final comment made in the pamphlet on this type of high school may be quoted as follows:

> At last, however, a better time is coming when the word "high" in "high school" will stand not alone for certain work in the classics, sciences, and mathematics, but it will also stand for high achievement in many other lines of effort that lead to the strengthening of character, the brightening of intellect, the developing of skill in preparing for one's work in life.

The experiment here described for girls has already been duplicated in the Newton schools by a similar group of classes for retarded boys. The special interest attaching to this experiment arises from the fact that usually less attention is paid to girls who find themselves unable to go on in the high school than to boys similarly situated.

BOOK REVIEWS

High School Education. Professional treatments of the administrative, supervisory, and specifically pedagogical functions of secondary education, with special reference to American conditions. Edited by CHARLES H. JOHNSTON. New York: Scribner, 1912. Pp. xxii +555.

According to the editor in his introduction: "The American high school is our most interesting educational institution, more democratic than the college and more selective than the elementary school." So great is the "fulness of life" of its students that it has borne good fruit in spite of "administrative and pedagogical" wastefulness. Although dominated by ideals that are more or less mediaeval, it "enjoys a fair measure of success." The point of view thus suggested is promising and the chapters which follow form on the whole a valuable contribution to the interpretation of the American high school in its administrative and pedagogical aspects with reference to present-day needs and ideals.

The editor writes the first two chapters. The first deals with the present-day diversity of demands made on the high school, the lack of well-defined principles of organization and of co-operation with society at large, and the pressing need of defining values and policies and of scientific reconstructions. The second chapter offers a well-balanced discussion of the disciplinary basis of the course of study. The older extreme views of formal discipline are rejected, and a modified form of the doctrine of specific disciplines is adopted, based on the recognized complexity of the processes involved in learning.

The chapters which follow, contributed by various American educators, chiefly college and university men, present first a brief sketch of the history of the secondary curriculum, principles and plans for reorganizing secondary education, the problem of the organization and control of instruction, and twenty-one chapters dealing with the specific subjects of the high-school curriculum.

The plea offered by Professor Davis in chap. iv for the six-year high-school course is very well worked out. The need for such a course is clearly stated and the different experiments to date are outlined, administrative difficulties are discussed, and an initial working-scheme is presented.

The various subjects of the course of study are discussed with reference to the "life-purposes of high-school students—not college admission requirements." A plan consisting of thirteen suggestive topics has been roughly followed in the various essays. While the chapters are quite general and

differ considerably in value, the reviewer believes that every secondary-school teacher could profit by studying with care not only the chapter dealing with his own specialty but all of them as helping him to appreciate the values of other subjects than his own. The bibliographies dealing with the pedagogical aspects of the respective subjects should be of decided value to every teacher.

The sections devoted to moral training and to instruction in matters of sex are well worked out and should be of value to all persons engaged in high-school work.

Notwithstanding the avowed aim, the discussions leave one with the impression that they are written by those not in intimate touch with real high-school problems. It would have been better if more men in the secondary field could have contributed to the book. The idea of formal discipline crops out occasionally, although the editor's more advanced ideas seem to be fairly well appreciated by the college and university specialists.

IRVING KING

STATE UNIVERSITY OF IOWA

Success: A Manual of Moral Instruction. By FRANK CHAPMAN SHARP. Madison: University of Wisconsin, 1913.

Probably no question of educational values or methods has received so much attention in recent times as that relating to moral instruction and training. It seems that all people feel the need of moral training of some kind; but there is great diversity of opinion respecting the right way to proceed in this matter. There are many, apparently, who believe that pupils should have systematic moral instruction, while others maintain that the thing to do is to put all our energy into the fixing of moral habits. Those who think that pupils should be instructed in regard to behavior usually assign lessons in textbooks, or give lectures upon right and wrong conduct, the aim being to lead pupils to an understanding of the principles involved. It is maintained by those who lay emphasis upon systematic instruction that if pupils can be got to memorize moral principles, they will be likely to practice them in every-day life. But those who doubt the value of formal lessons in moral conduct hold that a pupil may learn the principles of right and wrong in his textbook, but never make application of the principles to the real situations of daily life. On account of this difference of opinion between people interested in improving the conduct of the young, we have not made great progress in respect to moral training in the schools. It is rarely that one picks up an educational magazine or attends an educational convention without being told that in America we are behind in moral training, and we are being continually urged to devote more effort to improving the morals of the young.

Probably no one in this country has contributed more to the solution of this problem of moral training than has Professor Sharp, of the University of Wisconsin. For a number of years, he has been trying a certain method of

leading pupils to reflect upon the moral problems of their daily lives, and to solve these problems in view of certain principles of right and wrong behavior. He has had extraordinary success in arousing interest on the part of high-school and university students in problems of conduct; and with his method he has also developed in his pupils an unusual keenness in thinking straight through a moral situation, and reaching a sane conclusion regarding right conduct in reference to it.

In the present volume, Professor Sharp presents his method for the use of high-school pupils and teachers. In the first division of the book there are given many questions for the pupils to work out in advance of discussion in the class. In Professor Sharp's own work pupils are required to write out their answers, and offer them in class. These answers serve as a basis for class discussions. The questions pertain to the practical matters of everyday life—questions in which any high-school pupil who has reached his Junior year can hardly fail to be interested. The questions in Part I relate to the management of the mind, and the following illustrate the method of procedure:

1. Why does tying a knot in a handkerchief help one to remember an errand?
2. Can you repeat the alphabet backward as quickly and correctly as forward?
3. If you had a declamation to recite before an audience, what would you do to make certain that you would be able to repeat it when the time came?
4. Are habits easier to acquire at one time of life than another? What time of life is most favorable for acquiring them? What are we to think of the adage: "It is never too late to be what you might have been"?
5. How would you go about it to get control of a bad temper? For example, suppose you had made resolution after resolution, and when the time came to put it into effect you always failed. Make the situation real by thinking of actions on the part of other people likely to arouse your anger. Note that the problem is not merely that of finding out what you ought to do at the moment when provocation arises, but also what you should do to uproot the undesirable trait of character in the intervals of freedom from temptation.

And there are a great many other questions like these referring to the management of the mind.

Then in Part II are presented numerous questions relating to the Nature of Success. They are grouped under the following headings: Popular Misconceptions of Happiness; the Glow of Health; Work; Reading; Friendship; Service and Character. The purpose of all these questions is to cause pupils to become observant and reflective regarding moral situations presented in everyday life. It is not the primary aim to give the pupil information, though he does gain a great deal of knowledge relating to conduct; but the chief object is to develop in him the power of reflecting sanely upon the problems of life as they arise in his adjustment to people, and the habit of dealing with them effectively.

In the second division of the work, answers are given to the problems considered in the first division. These answers are intended in the first place

as an aid for the teacher. They present a point of view which will be of service to him in the discussion of the problems in the class. Then it is intended that these answers shall serve as a résumé of the discussions after they have been worked over by the pupils. In this way the pupil is led first to attempt to solve a problem by his own observation and reflection, and by the application of principles of right and wrong; and after he has made his best effort, and has had give-and-take discussion with his fellows in the class, he then gets the view which the experience of the race has formulated in respect to any problem which has been proposed.

From the beginning the pupil is helped to regard all these problems as having a bearing upon success; and he is led to consider, in the first place, the intellectual, physical, and moral conditions of success. No attempt is made to be complete or final in the treatment of these topics, but only to guide the pupil to reflect upon the matters of primary importance. Success is not defined for the pupil; he may proceed on his own conception of what it implies. But as the discussion of the matter proceeds, the pupil cannot fail to see that a certain type of man or woman—one with vigorous health, who meets the problems of everyday life in an intelligent manner; who loves his work and does it with spirit and enthusiasm; who has a deep interest in the higher and more educative forms of play and relaxation; who is a genuine good friend and has good friends; who is a loyal member of a loyal family; who is generous in his relations to people; who has interest in matters of public importance; and who believes in the value of a wholesome character—this, it is made to appear, is the type of person who will get the most out of life, who will achieve success in the highest way and who will do the most for the world.

To the present reviewer it seems that Professor Sharp's book should be of unusual service to high-school teachers. It should enable them to treat the subject of moral instruction and training in a very vital, natural, and effective way. Even if there should be no class in moral instruction in a particular high school, the teachers should nevertheless be able to get from this book many suggestions which they could utilize to advantage in morning exercises, and on occasions when they have an opportunity to discuss questions of conduct with pupils in a natural and unaffected way.

M. V. O'SHEA

UNIVERSITY OF WISCONSIN

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[1] *Abbreviations.*—Educa., Education; Educa. R., Educational Review; El. School T., Elementary School Teacher; J. of Educa. Psychol., Journal of Educational Psychology; Kind. R., Kindergarten Review; Lib. J., Library Journal; Liv. Age., Living Age; Outl., Outlook; Pedagog. Sem., Pedagogical Seminary; Pop. Sci. Mo., Popular Science Monthly; Psychol. Clinic, Psychological Clinic; R. of Rs., Review of Reviews; School R., School Review; Sci. Am., Scientific American; Teach. Coll. Rec., Teachers' College Record; Tech. World M., Technical World Magazine; Voca. Educa., Vocational Education.

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